DOCUMENT RESUME

ED 298 070 SO 019 538

AUTHOR	Cwi, David; Lyall, Katherine
TITLE	Economic Impacts of Arts and Cultural Institutions: A Model for Assessment and a Case Study in Baltimore. Research Division Report #6.
INSTITUTION	Johns Hopkins Univ., Baltimore, Md. Center for Metropolitan Planning and Research.; National Endowment for the Arts, Washington, DC. Research Div.
PUB DATE	Nov 77
NOTE	110p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Art Activities; Case Studies; Community; *Community Benefits; *Cultural Activities; *Economic Factors; Equations (Mathematics); *Models; Research Projects
IDENTIFIERS	Assessment Instruments; *Economic Impact; Economic Influences; *Maryland (Baltimore)

ABSTRACT

This research project attempts to determine the economic effects of arts activities and cultural institutions on a local community (Baltimore, Maryland). This document contains an economic impact model that uses 30 equations to determine direct and secondary effects on businesses, government, and individuals and a case study of the model involving eight Baltimore arts-related institutions. Section 1 describes the model's structure and strengths, and section 2 provides an overview of the Baltimore economy and arts community. Section 3 summarizes the results of the quantitative calculations for Baltimore and discusses the role of the arts in this city's economic development and executive recruitment, while section 4 provides tables of Baltimore arts-related economic data for 1976. Section 5 describes a detailed user's manual that explains the model and its applications. Appendices include: (1) a guide to model and data sources; (2) a description of multiplier and secondary effects; (3) the employee survey; (4) a discussion about audience surveys; (5) methods of identifying full-time and full-time equivalent employees; and (6) equation changes required when data represents multi-institutions or multi-jurisdiction. Tables and equations are included. (JHP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Research Division Report #6

Economic Impacts of Arts and Cultural Institutions:

A Model for Assessment and a Case Study in Baltimore

National Endowment for the Arts

November 1977

ED298070

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
● Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

SO 019538

A Report by David Cwi and Katherine Lyall, The Center for Metropolitan Planning and Research, The Johns Hopkins University, October 1977

PREFACE

In February 1976, the Research Division released a program solicitation requesting proposals for a study of the economic impacts of arts activities and cultural institutions on their communities. The decision to undertake this project was based on recognition of the growing need for information that would explain the relationship between arts and cultural activities and the economic environment of the communities in which these activities take place.

The research community showed keen interest in the project by responding with 42 proposals, many of them meritorious. Though the evaluation group recommended that five of the proposals be funded, resources permitted going ahead with only one.

The proposal submitted by the Center for Metropolitan Planning and Research, The Johns Hopkins University, has led to the development of a general purpose model that may be used for the analysis of the economic effects of arts and cultural institutions in many communities. The model is made up of 30 equations which may be modified as special community characteristics require. One of the features of the model is that the equations treat the individual effects separately, so that modifications can be made with clear understanding of their impacts.

This report includes both the model and a case study application of the model to eight institutions in Baltimore. The Arts Endowment recognizes that other methods for the evaluation of economic effects are possible and may be valid. The experience of selecting the proposal from The Johns Hopkins University from many others submitted, confirms the possibility that other satisfactory approaches may be developed for this purpose. However, we believe that the model presented in this report can be adapted to a variety of settings; will take account of a wide range of local governments, as well as various social, institutional and economic conditions; and may be considered suitable for general application.

Research Division
National Endowment for the Arts
October 1977

INTRODUCTION

The economic impact model uses 30 equations to determine a variety of direct and secondary effects on business, government, and individuals. It was developed to meet several objectives: (1) utilize data generally available from the internal records of arts institutions and from local, state, or federal documents (as applied to Baltimore, the model also required audience and employee surveys); (2) be used and understood by non-economists; (3) assess economic effects with as much accuracy as available data allows; and (4) identify negative as well as positive effects.

Section I briefly describes the general structure of the 30 equations comprising the model, reviews the ways in which this report differs from other economic impact studies, and cites important caveats regarding the use and abuse of economic impact studies. Section II provides an overview of the Baltimore economy and its arts community. Section III summarizes results of the quantitative calculations for Baltimore and discusses the role of the arts in economic development and executive recruitment. Section IV provides concluding policy observations. Finally, Section V presents a detailed User Manual explaining the model and its application. The several appendices are important to an understanding of the assumptions and methods of the Baltimore case study and for the application of the model in other locations.

In testing the model, we have had the indispensable assistance of Thomas Freudenheim, Director, and Ron Goff, Assistant Director, the Baltimore Museum of Art; Peter Lawrence, Managing Director, the Morris A. Mechanic Theatre; Ackneil Muldrow, Treasurer, and Camilla Sherrard, Chair of the Board, the Arena Players Theatre; Joseph Patterson, Business Manager, and Mark Gallagher, Center Stage Theatre; Richard Randall, Director, Edward McCracken, Administrative Officer, and Mary Cooney, Fiscal Secretary, the Walters Art Gallery; Robert Collinge, Director, and Josh Miller of the Baltimore Opera Company; Joseph Leavitt, General Manager, and Winifred Walker, Fiscal Officer, the Baltimore Symphony Orchestra; and Joseph Cerrone, Director, and Lynn Summerell, Associate Director, the Maryland Ballet. These individuals provided needed data from institutional internal records as well as information on their institutions' internal accounting practices which saved us from many errors. Their cooperation was also valuable in permitting us to survey their audiences and employees for other information vital to the computation of the model.

Teresa Moore assisted with the programming and retrieval of the computerized survey data. Catherine Ingraham collected data and made many of the computations. Louie Fringer typed the manuscript. Sally Feingold managed the audience survey field work.

David Cwi
Katharine Lyall

TABLE OF CONTENTS

Page

STRUCTURE OF THE MODEL, ITS USE AND ABUSE 1

THE BALTIMORE ECONOMY AND ITS ARTS COMMUNITY: AN OVERVIEW 9

SUMMARY OF INSTITUTION-RELATED ECONOMIC EFFECTS ON THE BALTIMORE METROPOLITAN AREA 13

- Direct Impact of the Eight Arts Institutions on the Business Sector of the Baltimore SMSA 13
  - Spending by the Eight Institutions 13
  - Employee Residence and Spending Patterns 13
  - Audience Residence and Expenditures 14
  - Spending by Out-of-Region Audiences 14
  - Spending by Guest Artists 15
- Secondary and Negative Impacts on the Business Sector 15
  - Negative Effects on Business Volume 17
  - Summary of Business Effects 17
- Impacts on Local Government 17
- Impacts on Individuals 21
- The Arts and Economic Development 21
  - Industrial Location 22
  - Executive Recruitment 23

CONCLUDING POLICY OBSERVATIONS 24

USER MANUAL 30

- Assumptions and Other Underlying Considerations 30
- Direct Impacts on the Local Economy 33

CONTENTS (continued)

Page

Secondary Impacts 40

Impacts on Government 49

Costs to Local Government 58

Impacts on Individuals 65

Appendices

APPENDIX A: Guide to Model and Data Sources 68

APPENDIX B: Multipliers and Secondary Spending Effects 79

APPENDIX C: The Employee Survey 81

APPENDIX D: The Audience Survey 84

APPENDIX E: Total Full-Time Employees and Full-Time Equivalents 86

APPENDIX F: Adaptations of the Model for Multi-Institutions and Multi-Jurisdictions 88

INDEX TO TABLES AND FIGURES

Page

T-1 A Model to Estimate the Economic Impact of the Arts 5

T-2 List of Equations 6

F-1 The Baltimore Metropolitan Area 10

T-3 Eight Baltimore Arts Institutions: Percentage Audience from Outside the Region 16

T-4 Direct Tax Payments to Local Government by Eight Baltimore Arts Institutions 18

T-5 Alternative Estimates of Foregone Property Taxes on Real Estate Property Owned or Occupied by the Eight Baltimore Arts Institutions, 1976 20

T-6 Summary of Economic Effects, 1976 25

T-7 Summary Data for Eight Arts Organizations in Baltimore SMSA, Fiscal Year 1976 27

T-8 Government Revenues of Eight Arts Institutions, Baltimore SMSA, 1976 28

T-9 Multiplier Values for Baltimore Arts Study 80

STRUCTURE OF THE MODEL, ITS USE AND ABUSE

The primary purpose of artistic and cultural institutions is not to create jobs, generate business for local entrepreneurs, or boost sales of durable goods. These functions can be better performed by a variety of other institutions in the public and private sectors. Nonetheless, arts institutions, intentionally or not, generate a number of economic effects on the local community.

The model we used to identify and estimate these effects consists of 30 linear equations* which we categorized into three groups: The letters B, G, and I designate these groups of equations which identify, respectively, effects on local business volume and expenditures, effects on government income and expenditures, and effects on personal income, jobs, and expenditures. Tables 1 and 2 schematically present the relationships among these equations.

Within these groups certain equations can be solved only by first solving a series of other equations which provide needed values. Thus some equations are followed by a sub-set (or even sub-sub-set) which are indicated with decimal points. For instance, the equation G1 requires, among others, the solution of G-1.1 and this equation requires, in turn, G-1.1.1 and G-1.1.2. While the numeration of these equations may cause the layman to assume that they are difficult to solve, in fact the mathematics are quite simple.

Each set of equations is aimed at describing some particular economic effect. For example, in the business sector--the "B" equations--arts institutions may directly affect local business volume by purchasing goods and services from local sources. Those related to the institution--employees, guest artists, and audiences--also spend locally. Certain equations estimate the total value of these institution-related direct expenditures during the fiscal year examined. The firms and individuals benefitting from institution-related direct expenditures will, in turn, spend a portion of this income locally. For this reason, other equations estimate the total secondary business volume that eventually results from institution-related direct expenditures, for example, the expansion of the local credit base eventually resulting from institution-related direct expenditures.

The model then, also estimates economic effects involving local government: the "G" equations. To begin with, businesses annually pay property tax on their property, equipment, and, in some communities, their inventory. Also, inasmuch as

---

*This model has been adapted from J. Caffrey and H. Isaacs, *Estimating the Impact of a College or University on the Local Economy* (Washington, D.C.: American Council on Education, 1971).

businesses have had to invest in plant, equipment, and inventory in part because of direct expenditures related to arts institutions, a portion of local business property tax revenues is attributable to the institutions under study and can be estimated by certain equations. In addition, the institutions themselves, as well as their employees, guest artists, and audiences, may directly pay a local sales tax and their employees may pay local income or real estate taxes. These direct tax payments can also be estimated by our equations.

Local government may also receive revenues from state or federal sources. As is typically the case when localities receive state aid for education, these revenues may be provided on a per capita basis so that some equations estimate state and federal aid attributable to the examined institutions. Conversely, arts institutions and their employees require governmental services, and public funds which must be spent to provide these services. An estimate can be made for a given fiscal year of the local governmental operating costs required to service the institutions and their employees. Further, government may forego property tax and other revenues due to an institution's tax-exempt status. The equations in the model estimate these foregone tax revenues.

The third category, the effect on individuals, is the "I" series. Institution-related direct expenditures, together with institution-related local governmental expenditures, represent a demand for local goods and services. To meet this demand, local businesses not only invest in property and inventory, but also add personnel or pay overtime, thereby increasing payrolls. The model provides equations which estimate these secondary effects on individuals.

The utility of this study and model lies less in its precision than in its clarity and scope. We made a concerted effort to go beyond past studies and acquire needed data through the use of institutional internal accounts, audience and employee surveys, and locally available data. As a general rule, when we were required by our methods or the lack of data to make an assumption, we opted for the most reasonable or conservative, that is, we adopted the assumption which attributed the highest negative economic effect or least positive effect to the examined arts institutions.

Consequently, this study differs from previous efforts in several respects. Not only has no other study been as inclusive, but, to the best of our knowledge, prior economic impact studies of arts and cultural institutions have not:

- examined employee and guest artist spending as well as audience and institutional expenditures;

- identified the toal of institution-related spending made with local firms and not simply assumed that all spending was local;
- identified factors affecting an institution's economic impact on a community and established that institutions can have different impacts;
- tried to account for the negative effects on local government and business of a community's arts and cultural activities to arrive at a picture of net cost, if any;
- examined critically the common premise that the arts are important to industrial development and executive recruitment.

In particular, this model's strengths are as follows:

- it can be adapted to a variety of settings and take account of local governmental, social, institutional and economic conditions;
- it utilizes data generally available from an institution's internal records or from local, state, or federal documents;
- it focuses not only on the institution but also its employees, guest artists and audience;
- it can be used and understood by individuals who have no training in economics and the social sciences;
- it can be used to assess the effects of one institution or many;
- it uses as inputs a variety of policy-relevant data respecting an institution and its community;
- it identifies negative as well as positive effects:

We are aware that some readers may draw unwarranted conclusions from this study. Therefore, we wish to caution the reader on four points.

> (1) It cannot be inferred from this or any other currently available "economic impact" study that support for the arts, as an economic development strategy, is to be preferred over other alternative uses of public or private dollars;
>
> (2) It cannot be inferred that the economic effects identified would not have occurred had the examined institutions not existed. For example, arts institutions

vie for leisure-time dollars that might have been spent in the community even if they were not spent on the arts. Conversely, much of the interest in artistic and cultural activities is sui generis. In the case of Baltimore, some of the audience might have travelled to Washington or other cities to satisfy their desire for the arts. In short, if specific institutions had not existed, we simply do not know whether others would have, or, in any case, the extent to which the economic effects noted would not have occurred.

(3) It cannot be inferred that the eight institutions examined in this study exhaust the effect of the arts on the Baltimore economy. The model utilized is intended to assess the economic effects of institutions. However, while the eight institutions studied include the region's largest arts institutions, these organizations constitute no more than 10 percent of the total arts employment in the Baltimore metropolitan area.*

Further, it can be assumed that arts institutions and individual artists and craftsmen residing outside the Baltimore metropolitan area purchase arts-related goods and services from firms in the Baltimore region. These expenditures have not been accounted for. Finally, for those interested in artistic and cultural activities, the availability of the arts plays a role in determining the attractiveness of a community as a place in which to work and live. While it is easy to overstate the role of the arts in decisions by individuals to remain, invest, or relocate to a community, no attempt has been made to assess net dollar benefits to the community due to the preferences of individuals for the arts.

(4) It cannot be inferred that economic effects are or ought to be important determinants of public policy toward the arts. We conclude this report with policy observations which include a caution against the inappropriate use of "return on investment" criteria in the evaluation of alternative public policies toward the arts.

---

*For example, census data for 1970 show a total of 5805 Writers, Artists, and Entertainers, in the Baltimore SMSA. Total full-time equivalent employment of the eight arts institutions was 404 in 1976, or about 7% of the reported 1970 total for the region. These represent actors, architects, authors, dancers, designers, musicians and composers, painters and sculptors, photographers, radio and TV announcers, and a miscellaneous category. They exclude individuals employed in art galleries, and other arts-related positions.

TABLE 1

A Model to Estimate the Economic Impact of the Arts

Business Sector Impacts

B-1 $E = E_i + E_e + E_g + E_a + E_v$
B-1.1 $E_i = z(TE_i - W - \mathrm{Transf} - T_x)$
B-1.2 $E_e = (f)\ (W_{en} + .5\ Y_{ns})$
B-1.3 $E_g = g(GD)$
B-1.4 $E_a = a(TA)$
B-1.5 $E_v = v(TVD)$
B-2 $BP = (m_p - 1)(E)$
B-3 $BV = (.45)(E)(m_i - 1)$
B-4 $BI = RP + Inv$
B-4.1 $Rp = (E/TBV)(AV/ar)$
B-4.2 $Inv = ir\ (E + BP + BV)$
B-5 $CB = (1-t)[TD_i + TD_e\ (Emps)] + (1-d)[DD_i + DD_e\ (Emps) + cbv(E + BP + BV)]$
B-6 $NBV = IB$

Government Sector Impacts

G-1 $GR = RETX + ST + YT + SA + OR$
G-1.1 $RETX = RET_i + RET_e + RET_b$
G-1.1.1 $RET_e = Emps(H)(pt)(TRA/R)$
G-1.1.2 $RET_b = (RP)(ar)(pt)$
G-1.2 $ST = st(STR)(E/TBV)$
G-1.3 $YT = (TYT/HH)(Emps)$
G-1.4 $SA = PS + OR$
G-1.4.1 $PS = N(C)(SE)$
G-2 $OC = MOC + PSOC$
G-2.1 $MOC = B(EHH/POP)$
G-2.2 $PSOC = (SB)(C/TC)$
G-3 $GP = (GP_m)(MOC/B) + (GP_s)(PSOC/SB)$
G-4 $FTX = AV(ar)(pt)$
G-5 $SSVS = P_i + S_i + L_i + T_i$

Impacts on Individuals

I-I $J = Emps + x(E+OC)$
I-2 $PY = W + p(E+OC)$
I-3 $DG = k(PY)$

For multi-institution and multi-jurisdictional analyses, appropriate subscripts must be added. See Appendix G.

Table 2

List of Equations

Economic Impacts on Local Business

Direct Impacts

B-1	Total institution-related local expenditures (E)
B-1.1	Local Institutional Expenditures for Goods and Services (E_i)
B-1.2	Direct Expenditures in the Local Community by Institutional Employees (E_e)
B-1.3	Local Expenditures by Guest Artists (E_g)
B-1.4	Local Expenditures by Local Audience and Patrons (E_a)
B-1.5	Local Ancillary Expenditures by Non-Local Audience and Other Users (E_v)

Induced Impacts

B-2	Purchases by Local Businesses from Local Sources in Support of Institution-Related Expenditures in the Local Economy (B_p)
B-3	Local Business Volume Stimulated by Institution-Related Income Spent by Local Business Employees (BV)
B-4	Value of Local Business Property Committed to Institution-Related Business (BI)
B-4.1	Value of Local Business Real Property Committed to Support Institution-Related Business (RP)
B-4.2	Value of Business Inventory Committed to Support Institution-Related Direct and Secondary Business Volume (Inv)
B-5	Expansion of the Local Credit Base Attributable to Institution-Related Deposits (CB)
B-6	Local Business Volume Unrealized Due to Institution-Related Enterprises (NBV)

Economic Impacts on Local Government

G-1	Total Institution-Related Local Tax Revenues (GR)
G-1.1	Local Real Estate Taxes Paid by the Institution, Its Employees, and Local Businesses Serving Both (RETX)
G-1.1.1	Local Real Estate Taxes Paid by Institutional Employees (RET_e)
G-1.1.2	Real Estate Taxes Paid by Local Businesses on Real Property Committed to Support Institution-Related Business (RET_b)
G-1.2	Local Sales Tax Revenues Resulting From Institution-Related Direct Expenditures (ST)
G-1.3	Local Income Tax Revenues Paid by Institutional Employees (YT)
G-1.4	State Per Capita Aid to Local Government Attributable to Institutional Employees (SA)

Table 2 (Continued)

G-2	Operating Cost of Government-Provided Municipal and Public School Services Attributable to the Institution and its Employees (OC)
G-2.1	Local Governmental Operating Costs (Excluding Schools)
G-2.2	Public School Operating Costs Attributable to Institutional Employees (PSOC)
G-3	Value of Local Governmental Property Committed to Support Services to Employees (GP)
G-4	Foregone Real Estate Taxes Due to the Institution's Tax-Exempt Status (FTX)
G-5	Value of Local Governmental Services Self-Provided by the Institution (SSVS)

Economic Impacts on Individuals

I-I	Number of Local Jobs Resulting from Institution-Related Direct Effects on the Local Business Sector and Government (J)
I-2	Total Local Personal Income Due to Institution-Related Direct Effects on the Local Business Sector and Government (PY)
I-3	Durable Goods Purchases Attributable to Institution-Related Increases in Total Personal Income (DG)

THE BALTIMORE ECONOMY AND ITS ARTS COMMUNITY: AN OVERVIEW

A quick overview of both the economy and the arts community of the Baltimore metropolitan area will put into perspective the impact of the eight arts institutions examined in this study.

As indicated by Figure 1, the Baltimore metropolitan area consists of Baltimore City and the five surrounding counties. While Baltimore City ranks seventh in population nationally, with some 900,000 residents, the metropolitan area, with a population of roughly 2.2 million persons, ranks thirteenth among SMSA's. (As defined by governmental agencies for the collection and aggregation of data, Baltimore City and the five surrounding counties constitute a Standard Metropolitan Statistical Area, or SMSA.)

Major employers in the Baltimore SMSA are concentrated in three broad sectors which together constitute a remarkably well-balanced economic base: the Port of Baltimore and related transportation activities; diversified manufacturing; and business, institutional, and governmental services.

As with other major east coast cities, Baltimore traces its economic origin to its suitability as a port. Currently, the port is ranked fourth nationally in terms of combined import and export tonnage and is the second leading container port on the east coast. A recent study has estimated that 26,000 jobs are directly related to port activities, while transportation and transshipment expenditures associated with the port activity pour over $400 million annually into the Maryland economy. *

As is the case nationally, manufacturing, while significant, is of declining importance in Baltimore's total economy. By far the single most important individual manufacturing employer in the Baltimore SMSA is the vast Bethlehem Steel facility at Sparrows Point, claimed to be the largest tidewater steel manufacturing complex in the free world. Some 25,000 to 30,000 people work at Sparrows Point both in the steel mill and in the company's shipbuilding operation. The size of the Bethlehem Steel work force accounts for as much as one-sixth of the total manufacturing employment in the Baltimore area; roughly half of these employees live in the city proper.

Other particularly large manufacturing firms include the General Motors' Chevrolet assembly plant (5,000 employees), Westinghouse (13,000 employees), and Western Electric (8,000 employees). In 1950 the garment industry employed as many as 20,000 people in the Baltimore SMSA. Today there are only about 12,000 jobs in this sector, and many of these seem threatened by the nationwide decline of this industry.

---

*University of Maryland, The Economic Impact of the Port of Baltimore on Maryland (April, 1975).

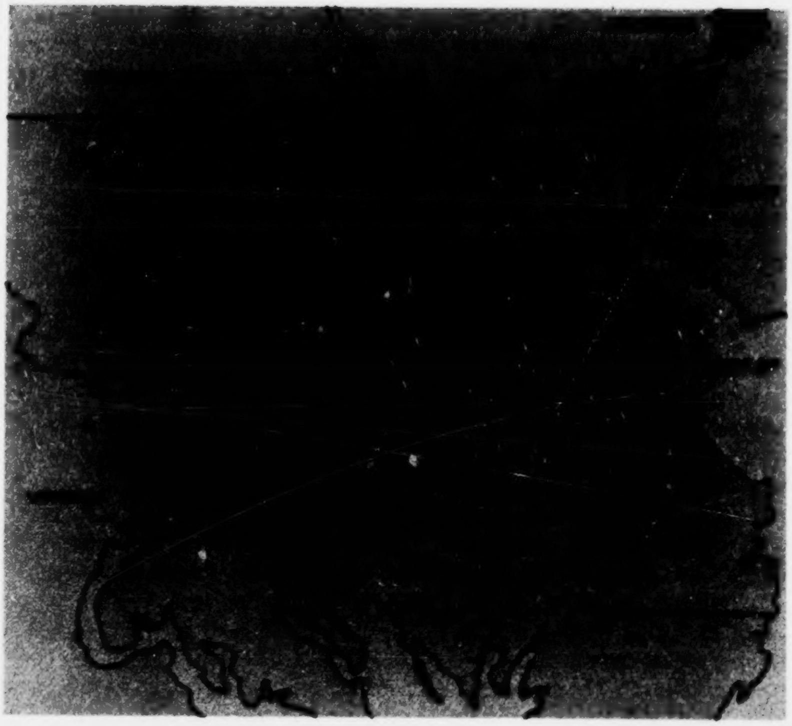

Figure 1 The Baltimore Metropolitan Area

Maturation and expansion of the metropolitan economy has produced a surge of jobs in the "services" sectors, accompanied by a very substantial rise in government and institutional employment. The latter resulted in 70,000 new jobs between 1964 and 1970, or about one-half of the total regional employment growth in that period. The growth of federal and state government and medical and educational institutions has been particularly significant. Currently, there are some 70 firms in the Baltimore metropolitan area with 1,000 or more employees, and there are many times that number of smaller firms. All together these firms, large and small, employ a total labor force of some 900,000 non-agricultural workers, both full and part-time.

According to the Washington Post, Baltimore City has a "growing reputation as a vital, diverse, culturally rich, and architecturally exciting city." The city has been an innovator and specialist in "urban homesteading" and other strategies to encourage the re-use and rehabilitation of old buildings and homes. Also, it has mounted one of the country's most ambitious renewal programs. It includes: the Charles Center office-shop-theatre-hotel complex; the transformation of Baltimore's in-town port area into one of the nation's most spectacular urban waterfronts; Coldspring, a new town-in-town designed by Moishe Safdi; and recent plans for a major renewal of the downtown retail district. In November of 1976, the Department of Housing and Urban Development recognized Baltimore's efforts with an unprecedented sixth design award in seven years.

Baltimore City is unable, under terms of the state constitution, to annex its surrounding suburbs, with the result that it has increasingly become the locus for the region's poor and others with high service needs. The efforts highlighted above reflect a twenty year strategy to create a culturally exciting, physically attractive, and economically viable city in which the SMSA's middle class will want to work, shop, and live.

The metropolitan area as a whole is rich in artistic and cultural resources. The region's amateur and professional arts activity is extensive. For example, in fiscal 1976, the Maryland State Arts Council made grants to some sixty organizations in the Baltimore SMSA. Within the SMSA are some fifteen institutions of higher learning, including six community colleges. There are several non-professional theatre and choral groups and at least six dinner theatres. Also there are a number of fully professional institutions, which are of cultural, if not strictly speaking artistic, importance, such as the Maryland Historical Society, the Baltimore and Ohio Transportation Museum, the Maryland Academy of Sciences, the Baltimore City Zoo, and numerous historic sites. In addition, the region is fortunate to have the Peabody Institute (a conservatory of music) and the Maryland Institute of Art.

The eight institutions examined by this study include the core of Baltimore's fully professional arts resources in repertory theatre, opera, symphony, dance, and the visual arts. They are: Baltimore Opera; Walters Arts Gallery; Baltimore Symphony; Morris A. Mechanic Theatre; Baltimore City Ballet; Baltimore Museum of Art; Center Stage; and Arena Players. Together, these eight institutions received more than $2.3 million in federal, state, and local support in fiscal year 1976.

SUMMARY OF INSTITUTION-RELATED ECONOMIC EFFECTS ON THE BALTIMORE METROPOLITAN AREA

Direct Impact of the Eight Arts Institutions on the Business Sector of the Baltimore SMSA

This section summarizes and discusses the major findings resulting from an application of the model to eight arts institutions in the Baltimore metropolitan area. While the identified effects are not large compared to many industries in the metropolitan area, they indicate that significant reductions in the budgets of these institutions would have perceptible effects on jobs, incomes, and regional business volume.

Throughout this report, terms such as "local," "the Baltimore metropolitan area," and "the Baltimore region" are used interchangeably to identify the Baltimore Standard Metropolitan Statistical Area (SMSA), which includes Baltimore City and Baltimore, Anne Arundel, Carroll, Harford, and Howard counties.

In testing the model, we treated each institution separately as well as identifying, when meaningful, each institution's differential effect among the six local governmental units that comprise the Baltimore SMSA. Appendix F is devoted to a review of the complications associated with multi-jurisdictional and multi-institutional analysis. In this report, we have aggregated the effects of the eight institutions, while reporting them on a total SMSA basis. All figures are for fiscal 1976 unless otherwise noted.

Spending by the 8 Institutions

In fiscal 1976, the eight institutions spent $5.3 million for goods and services, of which 47%, $2.4 million, represents purchases from suppliers and individuals in the Baltimore region. Another $4 million was spent for wages and salaries. Spending by employees, audiences, and guest artists is enumerated below.

Employee Residence and Spending Patterns

One striking feature is the extent to which the employees of the eight institutions live in the city. At least 80% of the institutions' professional and administrative staff members live in Baltimore City, with the remainder concentrated primarily in Baltimore County. Slightly less than half (47%) of all these employees are homeowners in the metropolitan area. At the same time, a relatively small number (approximately 50) of children of employees attend public schools in the region. (We are unable to determine from our survey information whether this is because employee families have fewer children of school age than the population at large, or whether arts employees use the private school system more extensively.) Employees reported that of $6.7 million of disposable family income (net income after deduction of taxes and social security contributions), two-thirds ($4.4 million) was spent in the metropolitan area. This figure represents one method of handling family income in circumstances, such as the Baltimore case, where the arts institution provides the bulk of household income for most employee households. For a discussion of alternative cases, see Section V.

Audience Residence and Expenditures

Total local paid attendance at all eight institutions during the 1976 season was approximately 718,000, with about 6% of the patrons coming from outside the metropolitan region. The percentage of out-of-region audience determined from our audience survey varied substantially among the eight institutions, ranging from 2% for the Walters Art Gallery and Center Stage Theatre to 14% for the Baltimore Museum of Art.

Local audiences spent, in addition to the ticket price, sums ranging from $3.85 to $15.65 per party per visit for items such as meals, transportation, parking and babysitters. The amount varied depending on the institution and the type of performance. As might be expected, attendance at the museums entailed the smallest auxiliary expenditures, while attendance at the Symphony and the Mechanic Theatre involved the highest average supplementary expenditures. (For a discussion of the technical problems associated with determining auxiliary spending patterns, see Section V. Because many persons attend performances and cultural activities in couples or groups, we formulated our survey questionnaire to elicit average expenditures by party size.) All together, local audiences in fiscal year 1976 spent an estimated $2,624,601 in addition to ticket and admission fees.

Spending by Out-of-Region Audiences

In fiscal 1976, some 43,000 visitors from outside the Baltimore region came specifically to use the eight arts institutions. These visitors contributed roughly half as much as resident audiences to local area spending despite the fact that they comprise only 2% to 14% of total attendance depending on the institution. Out-of-region patrons exert a disproportionate economic influence compared to local audiences, both because they spend more per visit and because a larger share of these visitors (7.5% to 63% depending on the institution) spend money at all.

Average per diem expenditures reported by out-of region parties ranged by institution from $11.80 to $48.60, yielding a total expenditure of $1,891,392 attributable to the drawing power of these institutions in attracting out-of-town visitors. It is important to remember that this calculation reflects expenditures only for those respondents who indicated that they came to Baltimore specifically to visit the arts institution under study. This percentage ranged from 24% of out-of-region respondents at the Walters to 76% of out-of-region respondents at the Opera (Table 3). It should be noted that these percentages reflect the presence nearby of the Washington metropolitan area. Audience and patrons from Washington, D.C., were counted in our survey among the out-of-region respondents because they are not technically in the Baltimore SMSA.

Spending By Guest Artists

Each year, arts institutions contract with designers, directors, conductors, choreographers, featured soloists, and others. These non-resident "guest artists" make a modest contribution to local spending. The eight examined institutions reported a total of 1,913 guest-artist days spend in the Baltimore region at per diem rates ranging from $30 to $40 for a total estimated fiscal 1976 local expenditure of $68,247. Our computation of guest artist spending is undoubtedly conservative, since no attempt has been made to include members of family or entourages in the total estimate.

Secondary and Negative Impacts On the Business Sector

These direct expenditures by the institutions and their staffs, audiences, guest artists, and out-of-region visitors do not capture the full effect of such activities on the economic base of the region. Such direct expenditures generate second-order effects, as local businesses make purchases of their own to support the institutions' local demand for goods and services. Eventually, Baltimore metropolitan region businesses purchase an estimated $9.1 million in local business volume. In addition, these local firms have invested in $5.7 million worth of inventory, equipment, and real estate in order to service institution-related business. This represents the fiscal 1976 value of these assets and not expenditures made in 1976, although a portion of these assets may have been acquired in that year. Expenditures were not necessarily made with local firms.

A portion of business and personal incomes generated by institutional activities are deposited with local banks. This results in an expansion of the local credit base. We estimate that eventually the regional credit base is augmented

TABLE 3

Eight Baltimore Arts Institutions: Percentage Audience From Outside the Region

	% Audience From Out-of-Region	% of Out-of-Region Audience Who Came Specifically to Attend Institution
Baltimore Opera	5%	76%
Walters Art Gallery	2	24
Baltimore Symphony	3	31
Morris A. Mechanic Theatre	6	58
Baltimore City Ballet	5	45
Baltimore Museum of Art	14	34
Center Stage	2	36
Arena Players	NR	NR

NR = None reported during survey period.

by some $3,106,000 as a direct consequence of fiscal 1976 institution-related deposits. The bulk of this effect occurs through the deposits of the institutions themselves.

Negative Effects on Business Volume

To the extent that the institutions operate enterprises or provide services in competition with local businesses, their receipts from these activities should be recognized as a substitution for other private business earnings in the community. In some instances, however, it may be reasonable to think that the subsidiary activities of arts organizations are net additions to total business volume in the region, perhaps competing with activities outside the area but not reducing sales within the region. After examining the auxiliary enterprises operated by the eight institutions in our Baltimore sample, we decided not to count any of the $280,820 in income from these subsidiary enterprises as a net loss to other private sector vendors. The bulk of this income was derived from gallery and gift shop sales and from concessioned restaurant facilities; profits from concessioned restaurant sales go to private business anyway. In the case of gallery sales, we assumed that sales represent items that were largely unobtainable elsewhere, and that, in any case, museums stimulate other private sector purchases through a heightened interest in the purchase of art. No data is available on which to make an evaluation or assumption of the transfers from other recreational, entertainment, or educational areas that may be represented by all or a portion of the ticket and related expenditures associated with attendance at arts events.

Summary of Business Effects

On the basis of these estimates, we present a general summary of the effects of the eight examined institutions on the Baltimore region business sector: institution-related activities in 1976 generated about $29.6 million of direct and indirect business volume in the region; they accounted for about $5.7 million of business real property, equipment, and inventories; and they generated about $3 million of additional local bank credit in the region. While these figures are not large compared to many firms in the private sector, they indicate that significant reductions in the budgets of these institutions would have perceptible effects on jobs, incomes, and business volume in the region.

Impacts on Local Government

Tax-exempt arts institutions have an effect on the fiscal status of local governments. We outline here fiscal 1976 tax payments to local government attributable to the eight institutions in our sample, and we assess their cost to local government. Costs are assessed in terms of foregone property taxes, unreimbursed municipal services, and the operating costs of public schools attributable to the institutions, their personnel, and their children. These items clearly do not exhaust all effects on local government. They reflect only selected impacts which may be traced directly to the institutions and their employees.

Although all eight institutions operate under tax-exempt status, they are nonetheless responsible for $151,767 in tax payments to the six local governments in the SMSA. The sources of these revenues were property taxes, locally retained sales taxes, local income taxes, and population-based state aid to localities (see Table 4). The figure of $151,767 includes only tax payments related to direct, not secondary, expenditures. Also, it excludes a variety of user fees paid by employees.

TABLE 4

Direct Tax Payments to Local Government by Eight Baltimore Arts Institutions

Real estate taxes paid to jurisdictions in the Baltimore SMSA by the arts institutions, their employees, and business property devoted to servicing the institutions (equation G1.1)	$99,537
Locally retained sales on institution-related business volume* (equation G1.2)	5,062
Local income tax revenues attributable to institutional and other business employees (equation G1.3)	27,558
State aid to local public schools attributable to children of institution-related families (equation G1.4)	19,610
TOTAL	$151,767

The institutions also provided municipal-type services for themselves, including security services and trash collection, with an annual value of about $33,172.

On the cost side of the ledger, local governments provide services for the employees and households of the eight institutions valued at more than $678,612. Of this, only $30,429 represents the cost of providing public school education for the children of arts employees.

---

*In many areas, sales taxes are imposed by state government but collected by local government for payment to the state. We count here only that portion of sales tax collections actually retained by the six local jurisdictions in the Baltimore metropolitan region.

Another cost to local government is represented by the value of governmental property necessary to provide services to the institutions and their employee households. The current value of local government property so committed is estimated at $274,138.

This may not exhaust total costs to government since institutional programs may benefit from donated government services such as increased police protection and free facilities or equipment.

Finally, we estimate that the value of foregone taxes on tax-exempt property owned or occupied by the eight Baltimore arts institutions is no more than $100,000 and is more likely near $60,000. This range reflects the two alternative assumptions cited in Table 5. None of the examined institutions pays property taxes. Either they own tax exempt property or they rent their facilities. Certain owners from whom they rent do pay property taxes while others are tax exempt. Three of the institutions occupy land and/or buildings owned by the City of Baltimore. Foregone property taxes consist, then, of institution owned or rented tax exempt property together with property owned by the City of Baltimore. For the purposes of this case study, we will assume that city owned property and buildings would have remained in public use in the absence of the institutions, that is, that $59,765 more nearly approximates the real value of the subsidy provided by the city through property tax exemptions.

It should also be noted that the alternative estimates in Table 5 reflect only foregone tax revenues on property used by the arts institutions themselves and do not attempt to reflect any spillover effects that these institutions may have on the value of surrounding (taxable) properties and neighborhood cohesion. These spillovers may be both positive and negative. For example, theatres stand empty much of the time, inviting loitering and vandalism, and some institutions create neighborhood parking problems which impose uncompensated costs on local residents and businesses. Attempts to estimate positive neighborhood effects must be matched by equal attempts to measure the negative effects.

TABLE 5

Alternative Estimates of Foregone Property Taxes on Real Property Owned or Occupied by the Eight Baltimore Arts Insitutions, 1976

	Taxable Value*	Foregone Property Tax
1. All currently exempt property (land and buildings) would revert to tax yielding uses.	$ 1,562,300	$ 93,738
2. All city-owned property (land and buildings) would remain in exempt uses, but other property would revert to taxable uses.	$ 996,080	$ 59,754

Source: Baltimore City assessment records, 1976-77.

* Total taxable value, which in Baltimore equals 50% of market value of land and improvements (buildings). The foregone tax yield on this base is the Baltimore City property tax rate (6%) times the total assessed value. All eight institutions are located in Baltimore City; however, had some been located in other local jurisdictions, the foregone tax yield from exempt properties would have had to have been calculated for each property at the tax rate levied by the jurisdiction in which it is assessed.

Impacts on Individuals

The economic impact of arts institutions on private individuals is largely through jobs and employment opportunities. We estimate that 1175 full-time jobs in the Baltimore area are produced by the activities of the eight arts organizations in our sample; 404 of these are directly with the institutions, and 771 are created as a consequence of institutionally related business and government expenditures. Taken together the eight institutions are roughly equivalent in employment effects to, say, the Coca-Cola Bottling Company, Coppin State College, Fidelity and Deposit Company of Maryland, or the Howard Research and Development Corporation, each of which employs between 400 and 500 persons in the metropolitan region. The _total_ employment impact of the eight arts organizations (1175) is approximately equal to the _direct_ employment totals of local firms such as Maryland Cup Corporation, Maryland General Hospital, Reads, Eastern Stainless Steel, First National Bank of Maryland, IBM, and the Maryland Casualty Company.

The jobs created, either directly or indirectly, by the eight institutions and their combined business transactions serve to generate $9.7 million of personal income in the region; $400,000 of this is spent for durable goods.

The Arts and Economic Development

In recent years, advocates of the arts have stressed the importance of spinoff economic effects that are not easily quantified. In particular, it has been claimed that the availability of artistic and cultural activities can be a decisive factor in both industrial relocation decisions and in the recruitment and retention of executives.* If arts and cultural activities have an ancillary role in economic development decisions, their influence would represent an important additional consideration in the development and evaluation of public policy toward the arts. We sought to evaluate local and national experience with respect to the impact of artistic and cultural amenities on industrial development and executive recruitment. In doing so, however, we do not mean to imply that public policy toward the arts ought primarily to aim at maximum economic returns to the community.

---

*E.g., The Report of the Governor's Task Force on the Arts and Humanities, _The Arts: A Priority for Investment_ (Commonwealth of Massachusetts, 1973); The Greater Philadelphia Cultural Alliance, _An Introduction to the Economics of Philadelphia's Cultural Organizations_ (Philadelphia, 1975); Mayor's Committee on Cultural Policy, _Report_ (New York, 1974); and the Washington Center for Metropolitan Studies, _The Arts in Metropolitan Washington: Some Preliminary Data on Economics, Financing and Organization_ (Washington, D.C., 1975)

Industrial Location

No hard data is available on the impact of artistic and cultural amenities on industrial development and executive recruitment in the Baltimore region or nationally. For this reason, we sought the judgments of a variety of knowledgeable individuals through unstructured interviews. We initially contacted local officials to assess their experience. Because of the unanimity of their views, we wondered if the Baltimore experience as seen by these local and state officials was typical, and so we contacted others nationally.

The twenty individuals interviewed included researchers and consultants in plant location matters (3); State of Maryland and local governmental officials in Baltimore City and the five surrounding counties responsible for facilitating industrial development in the state and region (7); officials of national economic development associations (2); representatives of chambers of commerce outside the Baltimore region who are active in economic development (2); and national consultants in executive recruitment (6).

We were struck by the unanimity of the views of these knowledgeable individuals. We think it fair to conclude from these interviews that the availability of artistic and cultural activities can in certain cases be a contributing, although rarely a decisive, factor in plant and executive location decisions. Those interviewed distinguished the "public relations" use of the arts from the role that the arts may actually play in corporate decision making.

The presence of varied and high quality artistic and cultural amenities appears to be used by those in economic development roles as an important indicator of the general level of a community's civility and culture. The presence of these amenities is used to suggest that a community is progressive, resourceful, concerned about itself, and energetic. Reference to the arts is used, then, as an important indicator of a generally favorable quality of life.

However, there was universal agreement among respondents that artistic and cultural amenities by themselves are not a determining factor in industrial location decisions.

The majority of business location decisions involve firms in production, assembly, manufacturing, and warehouse distribution. These firms vary in their special needs but commonly they look to ample supplies of water and electric power, convenient site location, availability of railroad sidings, adequacy of rail and road networks, and the like. In making relocation decisions, firms appear to make nested choices, first selecting suitable regions or metropolitan areas and then evaluating individual sites with respect to such matters as property values, tax rates, the characteristics and availability of the local labor force, wage rates, the availability of utilities, the size of the site, road access, transportation network, the availability of financing, proximity to raw materials and markets, and the availability of vocational schools. In most cases, only when "all things are equal" with respect to the business climate will firms give weight to quality of life considerations in their decisions.

Quality of life issues appear to be more important to firms that employ highly trained, salaried, and mobile personnel, typically with advanced degrees and to firms where top management will have to relocate. Corporate and regional headquarters, research and development firms, and government facilities are not as dependent on traditional site location considerations and, since they must recruit and retain skilled and mobile personnel, place more emphasis on quality of life issues because of the greater need for concern over employee satisfaction. Similar considerations also hold for single-owner firms.

Those interviewed indicated that there are many quality of life factors perhaps more important than quality artistic and cultural amenities. Artistic and cultural amenities are but one element of the total community fabric that includes factors such as recreational opportunities, schools, neighborhoods, the cost of living, climate, efficiency and performance of local government, the environment both man-made and natural, the quality of health and educational facilities, and positive social conditions. Cultural and recreational opportunities are generally viewed as one area of concern, with firms interested in the total mix of educational and recreational opportunities available to an employee and his or her family. Those interviewed generally agreed that quality education facilities were particularly important, with research and development firms emphasizing proximity to institutions of higher learning. Thus, one community's advantage with respect to cultural resources might be balanced out by another's advantage in other kinds of recreational opportunities or generally more favorable social conditions.

However, those interviewed did point out that location decisions can hinge on "executive preference," in which case almost anything from recreation to artistic amenities to climate could prove decisive. At the same time, no one was aware of any instances in which location decisions hinged on the presence of specific cultural activities or more general cultural considerations.

Executive Recruitment

In our interviews with executive recruitment consultants and major firms in the Baltimore metropolitan area, respondents were in agreement that an increasing number of executives emphasize quality of life considerations as much as salary and career advancement in deciding whether to relocate in a new position. Salary and career opportunities still predominate, but over the last two decades there has been a change in executive willingness to take a position simply because it represented a promotion and increase in salary. Apparently, it is becoming more common for executives to ask whether their families would also benefit from a promotion or relocation. Relocation may represent a major trauma for a spouse or children. An increase in salary may be largely eaten up by taxes. An executive may have to sacrifice his present life-style, for example, the ability to get in a round of golf before dinner.

Those interviewed went on to note that quality of life and life-style issues are very much matters of personal preference. While few want to live in a place with no cultural ambience, this does not mean that executives who are interested in artistic and cultural amenities require them to be "world class" or to be located in the home community. Access to artistic and cultural amenities may be via a more major city, or through touring events in the home community. Generally, executives were loath to relocate to cities with reputations for decay, crime, and a high cost of living. Of special importance were such issues as "whether it's a hassle to commute to work," education, neighborhoods, housing, recreational opportunities, the kind of people with whom the family would be socializing. In other words, executive status would not automatically suggest a special interest in the arts, and arts advocates should not equate "quality of life" with quality of artistic and cultural resources.

CONCLUDING POLICY OBSERVATIONS

Table 6 summarizes the more prominent economic effects of the eight arts institutions on the Baltimore metropolitan area. (Relevant equations, calculations, and data sources are listed in Appendix A.) Again, note that direct effects refer to expenditures made in fiscal 1976 by the institutions and their audiences, employees, and guest artists, while secondary effects may not be completely realized within one fiscal year. Also, business investment in plant and equipment refers only to the current (fiscal 1976) values of property that may have been purchased in other years and from non-local sources. Finally, we repeat our caveats from Section I. In particular, while we have noted that significant reductions in the budgets of arts institutions may be of interest to policy makers because of the perceptible effects on jobs, incomes, and business volume, one cannot conclude that support for the arts, given particular economic goals such as the creation of jobs, is more desirable than other uses of public dollars.

TABLE 6

Summary of Economic Effects, 1976

	Fiscal Year 1976
Total direct expenditures of the 8 institutions for goods and services	$ 5,344,754
Of which purchased locally	2,405,026
Employee household disposable income	6,701,479
Of which spent locally	4,422,976
Total audience spending (other than ticket price)	4,515,993
Of which local audiences spent	2,624,601
Of which out-of-region audiences spent	1,891,392
Spending by guest artists	68,247
Secondary business volume generated by suppliers and their employees	18,499,454
Current value of backup inventory, equipment, and property	5,746,743
Institutions-related tax payments to local government	151,767
Value of local government services to institutions-related employees and their households	678,612
Foregone property taxes on tax-exempt property	59,765
Total local government contributions to the 8 arts institutions	1,578,545
Number of full-time jobs in Baltimore SMSA attributable to institutions-related activity	1,175
Personal incomes generated by institutions-related business volume	9,676,284

In evaluating and contrasting the contribution of individual institutions to the aggregate impact noted in Table 6, we are persuaded that institutional type, for example theatre or museum, is less useful for identifying economic impact than structural distinctions, such as: the proportion of non-salary expenditures made to local suppliers (an institution's ability to spend locally is largely determined by the size and diversity of the local economy, see Appendix B); the number and composition of arts employees (guest artists, resident troupe, permanent employees); the proportion of employee expenditures remaining in the community; and local and visiting audience expenditures attributable to institutions.

The interaction of these factors is idiosyncratic. For example, in the case of Baltimore, if an arts employee resides in Washington, D.C., his earnings and resultant secondary spending would primarily benefit Washington, not Baltimore. If this were so, a visiting artist resident in Baltimore for a part of a season might have a greater local spending impact than the arts employee. Similarly, in the assessment of audience expenditures attributable to the arts, it is not sufficient to know total attendance, since audience spending varies substantially according to the residence of patrons (local versus out-of-region) and varies significantly by type of institution. Also, an institution that relies heavily on contracts to guest artists who spend only short periods in the community may export a significant proportion of their wage bill. An analogous situation will arise for institutions dealing with outside suppliers. Table 7 gives an indication of high, low and average values of various data associated with the eight institutions examined in this report.

It is also important to note that a significant proportion of the aggregate local impact of the examined institutions is due to the fact that, taken together, they received $2,320,278, or 25% of their total fiscal 1976 budgets, from government. As indicated by Table 8, the bulk of this ($1,578,545) came from local (city and county) governments. The largest portion of the support from local government consisted of $1,012,445 provided by the City of Baltimore to the Baltimore Museum of Art. Additional sums ranging from $12,000 to $266,000 were received from local governments by the other institutions. It is important to note that the city and counties contributed to other cultural activities and organizations not included in our study sample.

TABLE 7

Summary Data for Eight Arts Organizations in Baltimore SMSA, Fiscal Year 1976

	Total Over Eight Institutions	High & Low Values for Eight Institutions
Total Direct Expenditures	$ 9,418,304	$80,000 - $2,710,000
Labor (wages & salaries)	4,041,222	$24,000 - $3,117,000
Goods & Services	5,344,754	$ 0 - $2,271,000
Taxes	32,328	$ 8,128 - $ 24,000
Average Percentage Non-Labor Expenditures of Institutions Made in SMSA	47%	25% - 8%
Total Local Paid Attendance, 1976 Season	718,000 patrons	7,500 - 201,000 patrons
Total Out-of-Region patrons*	43,000 patrons	1,200 - 28,000 patrons
Average Expenditures per Local Party Other Than Ticket Price**	$6.60	$ 3.85 - $15.65
Average Expenditures per Out-of-Region Party Other Than Ticket	$30.32	$11.80 - $48.60
Total Government Revenues Received by Eight Institutions, 1976	$ 2,320,278	$2,500 - $1,112,958
Federal	$ 368,121	$ 0 - $ 150,000
State	$ 373,612	$ 0 - $ 197,000
Local (city & county)	$ 1,578,545	$ 0 - $1,012,000
Total Number of Guest Artist Days	1,913 days	0 - 870 days

---

*Includes only individuals indicating that they came to Baltimore specifically to use the institution.

**Averaged over all eight institutions and all party sizes.

TABLE 8

Government Revenues of Eight Arts Institutions

Baltimore SMSA, 1976

	Federal*	State	Local**
Baltimore Museum of Art	$56,401	$44,112	$1,012,445
Morris A. Mechanic Theatre	-	2,500	-
Arena Players	7,500	-	12,000
Center Stage Theatre	75,000	72,000	66,000
Walters Art Gallery	-	10,000	157,500
Baltimore Opera	76,000	31,000	44,000
Baltimore Symphony	150,000	197,000	266,000
Baltimore Ballet	3,220	17,000	24,600
TOTAL	$368,121	$373,612	$1,578,545

SOURCE: Institutional estimates, Auditors Reports, 1976.

*Excludes CETA monies.

**Local includes contributions from Baltimore City and each of the five surrounding metropolitan counties. In 1976, $120,000 was contributed by Baltimore County and $5,000 by Anne Arundel County to one or more of the eight arts organizations located in Baltimore City. 1977 was the first operating season of the Mechanic, and all figures are Mechanic estimates.

Consideration of economic effects has a role in the development of cultural policy. However, community planners and arts advocates will want to consider the broader community effects of artistic and cultural activities and not rely solely on narrowly circumscribed "return on investment" criteria in the development of public policy toward the arts. The following examples illustrate the inappropriate use of economic impact analysis: 1. Inasmuch as the economic impact of individual arts institutions varies with the factors noted earlier, narrow economic considerations could lead to differential funding among individual arts insitutions, based in part on arbitrarily applied economic goals. 2. In addition, it is clear that strategies pursued solely to increase the long run economic impact of particular arts programs might lead directly to a decrease in the quality of arts activities. One way to increase the local economic impact of arts activities would be to use only local talent and to buy only from local suppliers. However, even where practical, this sort of parochialism would run counter to the important objective of enabling local residents to experience a variety and quality of art forms generated outside their local communities. Also, it is worth noting that the disadvantages of such a strategy would be unevenly distributed, falling more heavily on smaller, less heterogeneous communities. 3. Similarly, maximum economic effects would suggest emphasizing programs which attract visiting audiences, who spend more in the community per attendance than local patrons, and it would suggest audience-building strategies aimed solely at people of means. Yet many communities have thought it important to provide cultural experiences for other segments of the population, such as the elderly and school children, unlikely to contribute much in the way of ancillary expenditures.

While economic considerations can be important to the development of cultural policy, these examples highlight the potential consequences of placing inappropriate emphasis on "return on investment" criteria.

USER MANUAL

Earlier in this report (Tables 1 and 2), we presented the thirty equations comprising the model used in this study. Now we will describe each equation in some detail, indicating necessary data sources and, where possible, alternative strategies for solving particular equations. The mathematics are not complex. A number of equations -- B-1, B-4, G-1, G-1.1, G-1.4, and G-2 -- simply add up the estimates produced by other equations. Certain general equations require the solution of a sub-set of other equations. In these cases, we first describe the general equation along with the economic effect it yields when solved. Then we take up in order each factor of this general equation, describing in turn the equation used to determine that factor. Thus, B-1 leads us to a series of equations on which it depends, B-1.1 through B-1.5. We proceed in a similar manner with regard to sub-sub-sets. In addition to our description here, the user may also wish to look at Appendix A where we present the data sources, equations, and calculations of the Baltimore study. As we proceed, the reader is urged to refer to Table 1, which summarizes the relationships among equations.

Assumptions and Other Underlying Considerations

Each of the thirty equations comprising the economic impact model used in the Baltimore study generates an estimate of a separate economic impact on businesses, government, or individuals. All of the impacts are estimated in dollar terms except the employment component, equation I-1, which produces an estimate of the number of jobs generated by institution-related activities.

In interpreting the resultant estimates, the user may wish to add together some of the separate dollar estimates as follows:

Total estimated audience expenditures (other than ticket price) for local and out-of-region audience	B-1.4 + B-1.5
Total estimated local expenditures for staff and guest artists	B-1.2 + B-1.3
Net direct and secondary institution-related business volume	(B-1 + B-2 + B-3) - B-6
Net public sector costs to local government (Subtract G-5 only if it can be assumed that government would have incurred the expense)	(G-2 + G-3 + G-4) - (G-5 + G-1)

We should also point out that the value of business investment, B-4, is a measure of asset value at a given point in time, not a *flow* of expenditures over a period of time. For this reason, it should not be added to the outputs of the other B equations, which represent *flows* over the fiscal year 1976. Similarly, in aggregating local government impacts the user will want to consider carefully whether it is desirable to focus narrowly on the net balance of governmental revenues to governmental budget expenditures--which is all that is allowed using the model--as opposed to returns to government and "the community" more broadly conceived.

The model goes beyond previous efforts in the wealth of data it requires, including the use of employee and audience surveys. When our methods or the lack of data required us to make assumptions, we opted for the most conservative, i.e., adopted the assumption which attributed the highest negative economic effect or least positive effect to the examined institution.

For example, in computing out-of-region audience expenditures, we assumed that those out-of-town visitors who used the institution, but were visiting the metropolitan area primarily for other reasons, might have incurred some or all of the daily expenditures they reported in any case. Therefore, our calculations utilize only the daily expenditures of individuals who reported that the primary purpose of their visit was to use the examined institution.

Various equations rely on estimates of household income and other facts about employee households. Focusing on the household rather than the individual employee is appropriate in those circumstances when it is not unreasonable to suppose that institutional employee households would not have been in the community except for the presence of the institution. Practicality suggests that in the absence of data to the contrary, this assumption be made whenever the majority of employee households derive the majority of their income from the institution. When this is not the case, employee income must be substituted for household income in equations B-1.2 and G-1.3. However, equations B-5, G-1.1.1, G-1.4, G-1.4.1, G-2, G-2.1, G-2.2, and G-3 were intended to be used on a household basis only. These equations identify economic effects that are difficult to meaningfully attribute solely to an employee as opposed to his total household. For example, the ability to own a home or save may be a function of the collective earning ability of the household. This is reflected in estimated property taxes and expansion of the local credit base.

In calculating the value of foregone property taxes on institutions-owned/occupied property, we reviewed the impact of alternative assumptions (see Table 5) concerning the possible uses of currently tax-exempt property, but did not attempt to evaluate positive or negative effects, if any, that currently exempt properties may have on surrounding property values.

It should be noted that several equations represent concessions to practicality. For example, in calculating the values of local business property committed to support institution-related business, we assumed that a percentage increase in demand prompts a similar percentage increase in investment in real property. This assumption is necessary because there is no way to determine which firm or institution may be the marginal user that prompts the need for increased investment in real property. Other concessions to practicality are noted in the discussion below.

There are several points to consider with regard to the sources of data. The user must make a determination at the very start of the work as to the definition of the "local" area of interest. In the Baltimore study, the local community of interest was defined to be the Baltimore standard metropolitan statistical area (SMSA), composed of Baltimore City and the five surrounding counties. While some of the calculations required data that varied by jurisdiction, for example, local property tax rates--the final estimates yielded by the equations identify area-wide SMSA impacts. For details of adaptations of the equations required for multi-jurisdictional analysis, see Appendix F.

The user will note that the arts impact model in the Baltimore study required data on audience expenditures, as well as a wealth of data about the institution and its employee households. Audience and confidential employee surveys were used. In some cases, it may be possible to use information on the community's general population where it is not possible to conduct an adequate survey of institutional staff. Various alternatives are explored in the description of specific equations and in appendices devoted to audience and staff surveys.

What this means is that approaches to solving certain equations will vary depending on locally available data. When equations utilize census or other commonly available data, references are provided. However, the model requires a great deal of local data, usually collected by local or state tax divisions, planning departments, budget officers, assessment bureaus, and the like. Because many of the equations are interconnected, researchers should carefully determine whether required data are available, bearing in mind the alternatives described in the manual, before committing themselves to assessing institutional impact through the use of the model.

Direct Impacts on the Local Economy

We begin our description with those equations relating to direct impact on the local economy. These include expenditures made in a given fiscal year by the institution, as well as its employees, guest artists, and audiences.

Equation B-1

E

Institution-Related Local Expenditures

$$E = E_i + E_e + E_g + E_a + E_v$$

E_i = Local expenditures by institution (B-1.1)
E_e = Local expenditures by employees (B-1.2)
E_g = Local expenditures by guest artists (B-1.3)
E_a = Local expenditures by local audience and patrons (B-1.4)
E_v = Local expenditures by non-local audiences and other users (B-1.5)

Equation B-1 sums the five separate direct expenditure effects identified by equations B-1.1 through B-1.5. This is the total dollar value in a given fiscal year of goods and services purchased by the institution itself, by employee households, by guest artists, by local audiences and other users, and by non-local visitors.

Equation B-1.1

E_i

Local Institutional Expenditures for Goods and Services

$$E_i = z(TE_i - W - \text{Transf.} - T_x)$$

z = Percentage of expenditures for goods and services made to local firms

TE_i = Total expenditures for the fiscal year under consideration

W = Gross compensation, including FICA, federal withholding, state withholding, unemployment compensation, and contributions to pension plans

Transf. = Transfer of funds from one internal account to another that might appear as an expenditure and thus distort actual total expenditure

T_x = Taxes and fees to government other than those appearing in W above: sales taxes, real estate taxes, or other payments and fees to government at all levels.

Institutions purchase goods and services from both local and non-local firms. B-1.1 is used to identify expenditures for goods and services made directly by the institution with local businesses, the first factor in determining institution-related local expenditures.

Subtract from an institution's total expenditures all payroll expenditures and payments to government, leaving only expenditures for goods and services. Then, determine total expenditures with local firms. This can be done in two ways. Draw a random sample of institutional purchase orders in each major expenditure category, noting total dollar expenditures made in that category with local firms as compared to those made with outside suppliers. This yields a proportion, z, spent locally for each major expenditure category. Total dollars spent in each category are multiplied by each z, and the resulting local expenditures totalled to determine E_i.

If the number of vendors with which the institution deals is relatively small, there is a more direct procedure. Simply examine the auditor's report by category of expenditure, excluding wage-related expenditures and payments to government. Typically, for each major category there is a handful of vendors with whom an institution does the bulk of its business. Simply identify the vendors that are local and add up the total spent with these local firms. Some arts organizations have sophisticated and computerized accounting procedures and are able to identify each vendor, its address, and the total expenditures with that vendor. These institutions will find it quite easy to employ this more direct procedure. An extremely high percentage of institutional expenditures are often made with a relatively small number of firms. The fiscal officer responsible for disbursements should then be able to get a good estimate of total dollars spent locally.

Equation B-1.2

E_e

Direct Expenditures in the Local Community By Institutional Employees

$$E_e = (f)\ (W_{en} + .5Y_{ns})$$

E_e = Direct expenditures in the local community by institutional employee households
f = Percentage of employee household income spent locally
W_{en} = Total net institutional salaries
Y_{ns} = Employee household non-salary income: income from rents, dividends, interest, and other sources

B-1.2, identifies the second factor important to determining institution related local expenditures. It is used to identify total expenditures in the community attributable to employees in circumstances, unlike the Baltimore case, where institutional salaries constitute less than one-half total employee household income. In circumstances such as the Baltimore case, where household income is primarily from institutional sources, substitute total household income (Y) for $(W_{en} + .5Y_{ns})$. Note the discussion of these questions at the beginning of this User Manual. In particular, only use (Y), total employee household income, when the majority of employee households derive the majority of their income from the institution.

To solve equation B-1.2, first identify W_{en}, total net institutional salaries, and add 1/2 of total employee household salary income. Then multiply by f, the percentage employees spend locally. The salary income of other family members is not considered because there is no reason to believe that this income is dependent on the existence of the institution. However, non-salary income is due to the enterprise of individuals who may be in the community only because a family member is an institutional employee. Therefore, B-1.2 arbitrarily attributes 1/2 of all non-salary employee household income to the institution.

To identify the percentage spent locally, employees can be asked, through a confidential survey (see Appendix C), to report this figure as well as total non-salary family income, if needed.

In solving B-1.2, it will be important to distinguish full-time from part-time employees. Net wages to part-time employees will be included in total net institutional salaries, W_{en}. However, it may be argued that the non-salary income of part-time employees should not be considered inasmuch as it is unlikely that the household whose enterprise resulted in this income resides in the community only because of a family member's part-time job at the institution.

Equation B-1.3

E_g

Local Expenditures by Guest Artists

$$E_g = g(GD)$$

E_g = Local expenditures by guest artists
g = Average daily expenditures by guest artists
GD = Total guest artist days in the community

Guest artists and their entourage have hotel and restaurant bills and make other local expenditures. B-1.3 is used to identify the total amount they spend, the third factor used in determining institution-related expenditures.

"Guest artist" refers to individuals who are not permanent residents of the community or considered, for payroll purposes, as employees. Typically, they are in the community for a short period of time in order to take part in a specific program. Guest artists can include lecturers, conductors, soloists, and so forth. It is not necessary for the guest artist to be paid by the institution in order for their local expenditures to be counted.

The value g, average daily expenditures by guest artists, is determined by dividing the total dollars guest artists report that they spend in the community by total days they report staying in the community. Presumably the guest artists available to the researcher will be those appearing at the institution during the period in which the researcher is gathering data for the economic impact model. These guest artists comprise a sample of the entire year's guest artists. They can be asked to complete a confidential survey citing the length of their stay in the community and the amount spent. (It is convenient to simply add a separate set of questions for guest artists to the employee survey; see Appendix C.) Responses collected may be assumed to be typical of average daily expenditures by all guest artists.

GD is determined by multiplying the total number of guest artists by their total days in the community. (This information is available from institutional internal records.) B-1.3 is then solved by multiplying average daily local expenditures by the total number of guest artist days in the community.

Some institutions may not care to ask a guest artist to tell them how much he or she typically spends while in the local community. In this case, some estimate should be made based on institutional knowledge of guest artist accommodations and so forth. When a per diem is paid, the institution may suppose that the guest artist spends all of the per diem locally, but not more; or the institution may have information on the basis of which to make other assumptions.

A combined approach is probably best if an institution plans to sample a limited number of guest artists, for example, those appearing during the data-gathering period, or if the institution expects only a limited number of replies by guest artists.

Institutions preferring to rely on their own best estimate of guest artist expenditures should take into account all likely expenditures. This is especially true when an institution utilizes a guest artist for a period of several weeks, for example, if the artist is part of a resident troupe. In this case, it is typical for the arts organization to facilitate the rental of an apartment, or the arts organization may rent apartments on a yearly basis which are sublet to such artists. In any case, it is the artist who is paying the rent out of his/her fee.

Equation B-1.4

E_a

Local Expenditures by Local Audience and Patrons Excluding Admission

$$E_a = a(TA)$$

E_a = Local expenditures by local audience and patrons
a = Average expenditure per attendance (excluding admission)
TA = Total attendance

B-1.4 allows us to determine the fourth factor in institution-related expenditures, the money spent locally by local audiences aside from admissions. Multiply a, the average expenditure per attendance (excluding admission) by the total attendance.

Average expenditure per attendance by local audience and patrons must be derived from an audience survey. As discussed in Appendix D, a particularly thorny problem arises in designing a survey instrument which can accurately elicit audience expenditures on a per person basis. Individuals commonly attend arts performances in parties of two or more and there is considerable danger that researchers may misjudge total audience expenditures if average individual responses are utilized to make per person expenditure estimates.

An alternative is to ask respondents to report the number of persons in their party and the total expenditures of the entire party so that values for a can be constructed for parties of one, two, three, and so forth, and the total attendance size figures, TA, weighted by party size as well. The sample data for Baltimore indicate that the distribution of audience by party size varies significantly by type of cultural institution, so that a stratified approach becomes more important where a multi-institution analysis is being performed.

Equation B-1.5

E_v

Local Expenditures by Non-Local Audience and Other Users

$$E_v = v(TVD)$$

E_v = Local ancillary expenditures by non-local audience and other users
v = Average daily per party expenditures by non-local audience and other users (excluding admission)
TVD = Total annual visitor-days by non-local audience and other users

This equation provides the last factor in describing direct institution-related expenditures. B-1.5 is used to determine the amount spent in the community by visitors and other non-local individuals in association with their attendance or use of local artistic and cultural institutions.

Multiply the average per party ancillary expenditures by total non-local audience visitor-days.

The values v and TVD can only be determined by conducting an audience survey in which non-local individuals are asked to report: total party expenditures in the local community; whether they and their party are in the community specifically to use the institution; and total days in the community (see Appendix D).

This survey will distinguish between two types of local expenditures by non-local audiences: one, the local expenditures of those who are visiting the community primarily because of their interest in a particular institution's programs; and the other, the expenditures of those who might have come to the community had the institution not existed, but who happen to use the institution while in the community. A decision to visit a locale may include a decision to visit a particular institution; this does not, however, tell us that a person would not have chosen to come to a community in the absence of the institution. So, while it may be informative to identify the percentage of non-local users who had decided prior to visiting a community to visit also a particular institution, this does not mean that the money they spent during their stay or in association with their use of the institution would not have been spent in the community had the institution not existed.

Therefore, in the interest of being conservative, our procedure attributes to the institution only the expenditures made by those whose principal reason for being in the community is their use of the institution. However, information on the total percentage of non-local users is important because it suggests that the institution is part of what makes the community attractive as a place to visit and, further, that the institution is helping to favorably advertise the community to others. Ultimately, these factors can translate into economic terms.

Secondary Impacts

Equation B-1 estimates economic effects directly related to the institution as represented by the expenditures in a given fiscal year made by the institution, its employees, guest artists, and others. In turn, these direct economic effects in local business generate second-order effects as local businesses make purchases of their own and pay salaries in order to support institution-related demands for goods and services. The next seven equations identify particular secondary effects. Several utilize economic coefficients or multipliers. These are discussed in Appendix B.

Equation B-2

BP

Purchases by Local Businesses From Local Sources in Support of Institution-Related Expenditures in the Local Economy

$$BP = (m_p - 1)(E)$$

BP = Purchases by local businesses from local sources in support of institution-related expenditures in the local economy
m_p = Repurchase coefficient for the local business sector
E = Institution-related direct expenditure in the local community (See B-1)

E, which is determined by equation B-1, represents institution-related direct impacts on the local economy: expenditures by employees, guest artists, out-of-town and local audiences, and the institution itself. In order to meet the demand for goods and services represented by E, local businesses make additional purchases of their own. The total of these secondary purchases made by local businesses from local suppliers is of interest.

You will be using a standard economic technique known as multiplier analysis in which initial volume of spending (E) is multiplied by a respending co-efficient (m_p), yielding BP, the total eventually spent by local firms as a consequence of E. Values for m_p reflect one's knowledge of the size and diversification of the local market area. The larger and more diversified the local economic base, the less will local businesses have to turn to outside suppliers to meet their needs. Thus, firms in large metropolitan areas are more likely to be able to meet their needs by turning to local suppliers, while businesses in small towns may have to turn more frequently to suppliers located elsewhere.

BP is an estimate of secondary purchases by local firms. In equation B-2, 1 is subtracted from m_p in order not to count direct expenditure, E, as part of BP. Appendix B cites typical values for m_p, and briefly explains the technique of multiplier analysis and development.

Equation B-3

BV

Local Business Volume Stimulated by Institution-Related Income Spent by Local Business Employees

$$BV = (.45)(E)(m_i - 1)$$

BV = Local business volume stimulated by institution-related income spent by local business employees
m_i = Respending coefficient for individuals
E = Institution-related direct expenditures in the local community (see B-1)

The previous equation, B-2, identifies total secondary institution-related purchases made by local firms from local sources. The employees of firms directly benefitting from institution-related business volume receive a portion of it as wages, and these wage earners in turn buy goods and services from local businesses. It is estimated for all communities that 45% of E, institution-related local expenditures, is received as income by the employees of local firms. Equation B-3 estimates the additional local business volume attributable to these employees.

Multiply E (from equation B-1) by 45% to estimate institution-related direct expenditures received as income by the employees of local businesses. Multiply also by m_i, the respending coefficient, which estimates the proportion that is eventually respent locally for goods and services. Values for m_i are based on national data (see Appendix B). As noted in the discussion of equation B-2, m_i is reduced by 1 in order not to count direct expenditures, E, as part of BV.

Equation B-4

BI

Value of Local Business Property Committed to Institution-Related Business

$$BI = RP + Inv$$

BI = Value of local business property committed to institution-related business
RP = Business real property committed to support institution-related business (see B-4.1)
Inv = Business inventory committed to support institution-related business (see B-4.2)

Firms invest in real property and inventory to support the demand for goods and services. Institution-related direct expenditures constitute such a demand; and the equations B-4.1 and B-4.2 estimate, respectively, the values of local business real property (RP) and inventory (Inv), committed to support institution-related business. B-4, then, sums up the values identified by equation B-4.1 and B-4.2.

B-4 estimates the current value of real property and inventory and not current expenditures made in the examined fiscal year, although a portion of these assets may have been acquired in that year. Expenditures were not necessarily made with local firms.

Equation B-4.1

RP

Value of Local Business Real Property Committed to Support Institution-Related Business

$$RP = (E/TBV)(AV/ar)$$

RP = Value of local business real property committed to support institution-related business
E = Institution-related direct expenditures in the local economy (see B-1)
TBV = Total local business volume (total local retail sales + total local wholesale sales + the value added to raw materials by local manufacturers)
AV = Total assessed valuation of business real property
ar = The ratio of assessed valuation to full market value

B-4.1, which provides one of two factors needed for B-4, assumes that the proportion of total local business real property committed to servicing institution-related direct expenditures is identical with E/TBV, or institution-related expenditures as a percentage of total local business volume.

This procedures assumes that a percentage increase in demand prompts a similar percentage increase in investment in real property, a necessary assumption since there is no way to determine which firm or institution may be the marginal user that prompts the need for increased investment in real property. Consequently, the only available procedure is to average the value of real property over all firms in proportion to their demand.

To determine TBV, data are available from the Census Bureau as well as from the local planning department or department of economic development. Consult the Bureau of the Census publications, Retail Trade Area Statistics, Wholesale Trade Area Statistics, and the Census of Manufacturers. At this writing, the latest data available from these documents are for 1967. Thus a projection must be made by the following procedure. Due to the expansion of the economy and inflation, TBV is much higher now than in 1967. Assume that the increase in TBV is in direct proportion to the increase from 1967 in local sales tax receipts. If there is no local sales tax, assume that increases in state sales tax reflect increases in local business volume. In areas where there is only a state sales tax, the state agency may have identified total tax revenues contributed by the local community. In any case, this percentage increase in sales tax receipts can be applied to TBV 1967 to yield an estimated current TBV. Be sure to adjust for any increases in the sales tax rate in the years since 1967 that might distort the calculated percentage increase.

AV is not total local assessed valuation; it refers to business property only. Further, in many communities, the assessed valuation (the value of property for tax purposes) is less than full market value; and the local tax office may only report assessed valuation. Full market value can be determined by dividing AV by ar, the percentage of full market value used in determining assessed valuation. When AV is 100% of market value, ar is 1.

Equation B-4.2

Inv

Value of Business Inventory Committed to Support Institution-Related Direct and Secondary Business Volume

$$Inv = ir(E + BP + BV)$$

Inv = Value of business inventory committed to support institution-related direct and secondary business volume
ir = Local inventory-to-business volume ratio
E = Institution-related direct expenditures in the local community (see B-1)
BP = Purchases by local business from local sources in support of institution-related expenditures in the local economy (see B-2)
BV = Local business volume stimulated by institution-related income spent by local business employees (see B-3)

To solve B-4.2, the second factor needed for B-4, the local inventory-to-business volume ratio is multiplied by the sum of E + BP + BV, the sum of direct and indirect institution-related expenditures in the community.

There is a direct relationship between gross sales and the value of inventory. The value ir is the local inventory-to-business volume ratio, calculated as the ratio of the value of end-of-year inventory to gross sales; ir, then, is the value of inventory as a percentage of gross business receipts. Data from which this ratio can be calculated for a national sample are supplied by the IRS from corporate tax returns (see *Statistics of Income, 1972*, to be updated in the near future). If the local planning department, assessments bureau, or economic development agency has independent data, communities that tax inventory will have local estimates of inventories which can be used to calculate a local ir figure. Other communities will have to use the national inventory-to-business volume ratio of .112. This figure is derived from IRS, *Statistics of Income, 1972*, Table 5.2, p. 172. BP and BV were included in model B-4.2 on the assumption that ir, the inventory-to-business ratio, remains constant over the full adjustment period.

Equation B-5

CB

Expansion of the Local Credit Base Attributable to Institution-Related Deposits

$$CB = (1-t)[TD_i+(TD_e)(Emps)] + (1-d)[DD_i+DD_e(Emps)+cbv(E+BP+BV)]$$

CB = Expansion of the local credit base attributable to institution-related deposits
t = Local time deposit reserve requirement
TD_i = Average daily balance in institution time (savings) accounts
TD_e = Average daily balance in employee household time (savings) accounts
Emps = Total full-time and full-time equivalent employees
d = Local demand deposit reserve requirement
DD_i = Average daily balance in institution demand (checking) accounts
DD_e = Average daily balance in employee household demand (checking) accounts
cbv = National cash-to-business volume ratio
E = Institution-related direct expenditures in the local community (see B-1)
BP = Purchases by local business from local sources in support of institution-related expenditures in the local economy (see B-2)
BV = Local business volume stimulated by institution-related income spent by local business employees (see B-3)

Equation B-5 estimates total additions to the community credit base attributable to institution-related time (savings) and demand (checking) accounts, that is, institutional accounts, the accounts of employee households, and the accounts of businesses and employees affected directly or indirectly by the institution and its employee households.

In B-5, t and d refer, respectively, to the local time and demand deposit reserve requirements, so that 1-t or 1-d indicate the percentage of deposits in time demand accounts that may be used by financial institutions for loans. TD_i and TD_e are, respectively, institutional and employee household time (savings) accounts. DD_i and DD_e are, in similar fashion, average daily balances in demand (checking) accounts by the institution and its employee households. TD_i may be determined from institutional accounts by averaging end and middle of the month checking account balances as indicated by institutional checking account statements, thereby taking a sample of 24 days. Employees can be asked to report average daily household time and demand account balances.

The accounts of part-time employees should be counted in proportion to their full-time status. Therefore, Emps refers to total full-time employees and total part-time employees aggregated into full-time equivalents.

54

The value *cbv* is the national cash-to-business volume ratio, reflecting cash held in reserve by businesses as a percentage of total business volume. For example, in the Baltimore study, a value of .028 was assigned to *cbv*. This value was calculated as an average of 1965 and 1972 ratios determined from *U.S. Statistics of Income*, Internal Revenue Service, *U.S. Corporate Tax Returns, 1965, 1972*, Table 5.2, p. 1972. We averaged ratios for two years to mitigate the cyclical effects of the most recent (1972) data which reflect the recession conditions of that period.

The issues previously raised in discussion of the impact of employee households (see B-1.2) apply, with obvious differences, to B-5. Household savings and checking accounts may include contributions from a working spouse or other family member. Therefore, B-5 may overstate institutional impact in that it combines effects that are associated with employee *households* with effects more specifically attributable to individual institutional employees.

B-5 does not reflect expansion of the local credit base from secondary employment stimulated by institution-related direct and secondary expenditures (see 1-2).

Equation B-6

NBV

Local Business Volume Unrealized Due to Institution-Related Enterprises

$$NBV = IB$$

NBV = Local business volume unrealized due to institution-related enterprises
IB = Income from institution administered businesses

The equation B-6 requires an examination of institutional operations and auditor's reports to identify income from enterprises administered by the institution or an affiliated body, for example, income from sources such as gift shops, restaurants, and sales and rental galleries. Do not include income derived from concessions.

B-6 is an attempt to recognize institutional enterprises that may have unforeseen negative or positive effects that need to be taken into account in assessing the local economic impact of the institution. Calculating the business volume of subsidiary institutional enterprises is a first step in identifying whether these benefit, harm, or have no impact on other businesses or sectors of the economy, either community-wide or in the area immediately adjacent to the institution. The assumptions made about the impact of subsidiary enterprise must be a matter of informed judgment on the part of the local researcher.

Impacts on Government

All economic enterprises, including artistic and cultural institutions, represent a cost and benefit to local government. We note again that the equations cited in this manual provide a narrow perspective on the costs and benefits to local government, focusing primarily on the effects that can be most readily quantified. The next eight equations focus solely on tax income and governmental expenditure and do not identify the broader impact of investment in artistic and cultural institutions.

Equation G-1

GR

Total Institution-Related Local Tax Revenues

$$GR = RETX + ST + YT + SA + OR$$

GR = Total institution-related local tax revenues
RETX = Real estate taxes paid by the institution, its employee households, and local businesses serving both (see G-1.1)
ST = Local sales tax revenues resulting from institution-related direct expenditures (see G-1.2)
YT = Local income tax revenues paid by institutional employee households (see G-1.3)
SA = State aid to local government attributable to institutional employee households (see G-1.4)
OR = Other local revenues attributable to the institution and its employee households (see discussion of G-1.4)

G-1 sums the institution-related local tax revenues identified by the equations G-1.1 through G-1.4. In this sub-set, two equations depend in turn on still others: G-1.1 requires G-1.1.1 and G-1.1.2 while G-1.4 requires G-1.4.1.

Equation G-1.1

RETX

Local Real Estate Taxes Paid by the Institution, Its Employees, and Local Businesses Serving Both

$$RETX = RET_i + RET_e + RET_b$$

$RETX$ = Local real estate taxes paid by the institution, its employee households, and local businesses serving both
RET_i = Local real estate taxes paid by the institution
RET_e = Local real estate taxes paid by institution employee households (see G-1.1.1)
RET_b = Local real estate taxes paid by local businesses serving the institution and its employee households (see G-1.1.2)

G-1.1 is the first of four equations needed to describe total institution-related local tax revenues (G-1). It sums the real estate taxes paid to local government by the institution, its employees, and local businesses serving both.

$\underline{RET_i}$ represents real estate taxes paid by the institution itself. Since most artistic and cultural institutions are non-profit, tax-exempt institutions, they will pay no real estate taxes, and the value of RET_i will usually be zero. Some may own property which is not used for non-profit purposes, in which case they will pay property tax. Total real estate taxes paid to local government will include RET_i as well as RET_e and RET_b, the values for which are derived by solving equations G-1.1.1 and G-1.1.2.

Equation G-1.1.1

RET_e

Local Real Estate Taxes Paid by Institutional Employees

$$RET_e = Emps(h)(pt)(TRA/R)$$

RET_e = Local real estate taxes paid by institutional employee households
Emps = Total number of employees
h = Percentage of employees owning homes locally
pt = Local residential property tax rate
TRA = Value of local residential housing
R = Total number of assessed residences

G-1.1.1 takes the average assessed value of a local residence and multiplies this average by the local residential property tax rate and the number of employee households owning local homes in order to estimate total local property tax paid by institutional employee households. This procedure is employed in lieu of all employees reporting their total local property tax payments through a confidential employee survey. All that is required of employees is that they report whether they own a home locally.

Dividing TRA by R yields the average value of local residential housing. TRA can be found in the local department of assessment or taxation reports. R should be available from the same sources. If not, consult the 1970 Census of Population and Housing report for your local community.

It is important to note that TRA and R must be consistent. R must include all residential units whose tax revenues are included in TRA, for example, the revenues produced by apartment buildings as well as private homes if individual apartments are included in R. The value, h is the percentage of employees owning local homes. To derive h, employees can be asked through a confidential survey whether they own a home (see Appendix C).

Property tax contributions of part-time employee households should only be counted in proportion to hours worked at the institution. This can be accomplished by differentiating full-time from part-time employees in the employee survey and aggregating part-time employees into full-time equivalents. Knowing the percentage of part-time employees who own a home and the number of full-time equivalent personnel residing locally, G-1.1.1 can be applied to part-time employees separately to determine their local property tax contribution.

Equation G-1.1.1 assumes that employees who own homes locally own only one. Employees also could be asked to report how many homes they own, which would yield an average number of local homes owned by employee households. This would constitute a new term in G-1.1.1.

There are at least two issues which must be raised in connection with G-1.1.1. First, the equation ignores employee households that rent, and it thereby omits their property tax contributions. The local planning agency or bureau of taxation might have data on the average yearly contribution to the property tax paid by renters; this can be multiplied by $\underline{1-h}$ to yield total property tax paid by employee households that rent rather than own. Second, it is not clear that the property tax revenues identified by G-1.1.1 would not have been generated had the institution not existed. The household might have owned the home even if a family member had not been employed by the institution; or, if the employee household had not bought the house, someone else might have. All that can be claimed by any institution is that its employees contribute to the community through property taxes.

As noted in our discussion of B-1.2 and B-5, some may argue that this overestimates $\underline{RET_e}$. Our remarks in these earlier discussions apply here also. Additionally, we again call the user's attention to the discussion of employee households at the beginning of Section V, User Manual.

Equation G-1.1.2

RET_b

Real Estate Taxes Paid by Local Businesses on Real Property Committed to Support Institution-Related Business

$$RET_b = (RP)(ar)(pt)$$

RET_b = Real estate taxes paid by local businesses on real property committed to support institution-related business
RP = Value of local business real property committed to support institution-related business
ar = The ratio of assessed valuation to full market value
pt = Business and property tax rate

Equation G-1.1.2 is a variant of equation B-4.1, which identified RP, local business real property committed to support institution-related direct expenditures. G-1.1.2 multiplies RP by the local assessment ratio and property tax rate to yield real estate taxes paid by local businesses on real property committed to institution-related businesses. Thus, much of the discussion of B-4.1 applies to G-1.1.2.

If the local community taxes inventory apart from business real property, G-1.1.2 can be used to identify taxes paid on business inventory, Inv, committed to support institution-related business by substituting Inv for RP (see B-4.2) together with the correct assessment ratio and tax rate. G-1.1.2 does not estimate the real estate taxes paid by employees in jobs created indirectly by institution-related direct and indirect effects on business identified by the B-series models (see Model I-1).

Equation G-1.2

ST

Local Sales Tax Revenues Resulting from Institution-Related Direct Expenditures

$$ST = st(STR)(E/TBV)$$

ST = Local sales tax revenues resulting from institution-related direct expenditures
st = The percentage of locally generated sales tax revenues retained locally
STR = Sales tax revenues generated locally
E = Institution-related direct expenditures in the local community (see B-1)
TBV = Total local business volume (total local retail sales and total local wholesale sales and the value added to raw materials by local manufacturers)

Equation G-1.2 yields the second factor needed to estimate total local tax revenues. In it, E/TBV identifies institution-related direct expenditures in any one fiscal year as a percentage of a community's total business volume for that year (see B-4.1). G-1.2 assumes that if institution-related direct expenditures are X% of local business volume in a given year, they can be expected to result in a similar percentage of that year's total sales tax receipts. STR represents total sales tax revenues generated locally. This information should be available from the state or local retail sales tax division.

In some states the sales tax is a state tax with a certain percentage returned to the local community. In this case, the local community receives percentage st of all sales tax revenues generated locally; therefore, st of (STR)(E/TBV) is locally retained sales tax receipts. If the sales tax in a community is strictly a local tax, st = 1 and can be dropped from the equation.

G-1.2 underestimates total eventual sales taxes attributable to the institution, since it does not take into account secondary expenditure effects BP or BV (see B-2 and B-3).

Equation G-1.3

YT

Local Income Tax Revenues Paid by Institutional Employee Households

$$YT = (TYT/HH)(Emps)$$

YT = Local income tax revenues paid by institutional employee households
TYT = Total income tax revenues retained by the local jurisdiction
HH = Total local households
Emps = Total number of employees

Income tax revenues for local governments generally arise in one of two ways: either they are a direct earnings or income tax levied by local government; or they are a "piggyback" tax in which a surcharge on the state income tax is collected by the state and rebated to each local government. In some instances, the calculation of local revenues from an earnings tax can be complicated by the fact that commuters may pay the tax at a different rate than residents of the local jurisdiction. In this case, G-1.3 should be split into two parts, using different average tax yields per household (TYT/HH) for residents and commuters.

Income tax contributions by part-time employees should be counted only in proportion to their full-time status. Aggregate part-time employees into their full-time equivalents and treat them separately. Notice that G-1.3 assumes that each institutional employee comprises a household.

In the case of a "piggyback" tax, the local fiscal officer will have information on locally rebated revenues collected by the state; this can be used directly in calculating the average yield per local household.

As discussed at the beginning of this manual, it may be more appropriate in certain cases to utilize employee rather than household income. In this circumstance it may be possible to utilize institutional records to total employee local income tax withholdings. However, this introduces the possibility of error since some individuals deliberately have their employers over-withhold by claiming fewer deductions than they are entitled to.

When used on a household basis, G-1.3 takes the average tax yield per household times the number of employee households. Alternatively, employees can be asked to report total household income tax paid to local government on the confidential employee survey. If per household data are not available, G-1.3 may be solved by identifying the total number of individuals in employee households and multiplying this number by per capita local income tax revenues. G-1.3 gives the third factor in total local tax revenues related to the institutions (G-1).

Equation G-1.4

SA

State Per Capita Aid to Local Government Attributable to Institutional Employees

$$SA = PS + OR$$

SA = State per capita aid to local government attributable to institutional employee households
PS = State public school per pupil aid attributable to institutional employee households
OR = Other state revenues attributable to the institution and its employee households (per capita)

G-1.4, the fourth equation needed for G-1, estimates total state aid attributable to institutional employee households as the sum of state per pupil school aid, PS, and other per capita state revenues. PS is estimated by equation G-1.4.1, (see discussion of employee households at the beginning of manual).

G-1.4 deliberately focuses on state aid that is provided solely on a per capita basis, as in the case of PS, which is on a per pupil basis. Researchers will have to contact the local community's budget officer to review state programs providing local funds on a per capita basis, either for the total population or by eligibility group. State aid attributable to employee households will require identifying the number of eligible persons in employee households in each program area for which the state provides per capita aid. Researchers will have to judge whether the revenue source is significant enough to warrant the additional questions on the confidential employee survey that will be required. If aid comes on a per total population basis, then researchers will, at a minimum, need to identify the total number of persons in employee households. Part-time employees should be aggregated into full-time equivalents, attributing state per capita aid to them in proportion to their full-time status at the institution.

Equation G-1.4.1

PS

State Public School Per Pupil Aid Attributable to Institutional Employee Households

$$PS = (N)(C)(SE)$$

PS = State Public School Per Pupil Aid Attributable to Institutional Employee Households
N = The number of employee households with children in public elementary and secondary schools
C = The average number of children employee households send to public elementary and secondary schools
SE = State per pupil educational grant to the local community

It is not uncommon for states to provide school aid to local communities on a per pupil basis. Equation G-1.4.1 estimates PS, total of per pupil state aid attributable to employee households. (See employee household discussion in introduction to manual.)

To estimate N, researchers will have to identify the number of employee households with children in public elementary and secondary schools and the average number of children each of these households sends to public school, thereby allowing an estimate of the total number of employee children in public schools. This figure, multiplied by SE, the per pupil state grant, yields PS. To identify the number of employee households with children in public school will require an estimate of the percentage of all employee households with children in public school. This means an additional question on the confidential employee survey. Employees will also have to be asked to report the number of children they send to public elementary and secondary schools.

Costs to Local Government

In the preceding G equations, we have provided strategies and structured suggestions for identifying institution-related contributions to local government. Our concern has been limited to tax or other revenues attributable to the institution. From an equally narrow perspective, researchers can examine the cost to local government imposed by the institution and its employee households. Selected costs are estimated by equations G-2 through G-5.

Even viewed narrowly, governmental involvement with the arts imposes costs that are not accounted for by the equations below. An attempt should be made to identify these costs, be they donated services, special contributions, or whatever. Perhaps most importantly, resources devoted to the arts become unavailable to government for use in pursuing other public goals. This is often a primary reason for governmental concern with accountability for all public programs, including arts programs.

It might be helpful for the user to review the discussion of employee households at the beginning of this manual, particularly with regard to equations G-2, G-2.1, G-2.2, and G-3.

Model G-2

OC

Operating Cost of Government-Provided Municipal and Public School Services Attributable to the Institution and Its Employee Households

$$OC = MOC + PSOC$$

OC = Operating cost of government-provided municipal and public school services attributable to the institution and its employee households
MOC = Local governmental operating costs (excluding schools) attributable to institutional employee households
PSOC = Public school operating costs attributable to institutional employee households

G-2 is a summing function, adding local governmental operating costs (excluding schools) attributable to the institution (MOC) and local public school operating costs attributable to the institution (PSOC). Equations G-2.1 and G-2.2 identify these two values.

Equation G-2.1

MOC

Local Governmental Operating Costs (Excluding Schools) Attributable to Institutional Employee Households

$$MOC = B(EHH/POP)$$

MOC = Local governmental operating costs (excluding schools) attributable to institutional employee households
B = Local operating budget excluding public school costs and non-locally generated revenues
EHH = Total number of persons in local residing employee households
POP = Total local population

Local government incurs a variety of costs in providing services to institutions and their employee households. These costs include both capital investment in facilities required to provide services and operating costs associated with the delivery of services.

Equation G-2.1 apportions to the institution and its employee households their share of local governmental operating expenditures in such areas as police and fire protection, library services, sanitation, and, in general, all areas except public education, which is handled separately by equation G-2.2. (Equation G-3 apportions all corresponding capital costs.) G-2.1 represents a pragmatic approach to resolving several difficulties. Neighborhoods vary in their cost to local government, for example, in areas such as police and fire protection. Employee households may be located in a variety of neighborhoods. How should the allocation of costs to local government be weighted? Social service costs provide a particularly striking example. These costs often represent a major portion of a local government's operating budget. If it turns out that employee households do not require social services, then it would seem important not to attribute social service costs to employee households.

If the factors which prompt a household to impose a disproportionate cost on local government were known, appropriate questions could be included in the confidential employee survey, and the allocation of costs per employee household could be weighted accordingly. This procedure would present tremendous theoretical and practical difficulties. A pragmatic approach requires the per capita allocation of all non-school operating costs over the entire local population, recognizing that this may overstate the costs incurred in servicing the institution and its employee households.

G-2.1 focuses solely on employee households. It assumes that, if employee households make up X% of the total population, then they impose the same percentage of total non-school governmental costs. EHH/POP represents employee households as a percentage of the total population. EHH can be determined by including an appropriate question on the employee survey. POP is available from the local planning department, and B will be provided by the local office of the budget. It is important to make certain that the figure used for B excludes contributions to the school budget from other than local sources, since these have been counted in equation G-1.4, and we are only concerned with costs to local government.

Equation G-2.2

PSOC

Public School Operating Costs Attributable to Institutional Employee Households

$$PSOC = SB(C/TC)$$

PSOC = Public school operating costs attributable to institutional employee households
SB = Local public school operating budget, excluding revenues from non-local sources
C = Number of children in employee households attending local public primary and secondary schools
TC = Total enrollment in local public primary and secondary schools

The preceding discussion of equation G-2.1 applies with necessary changes, to equation G-2.2, which apportions the costs of local public schools over employee households. Using the employee survey, the total number of employee household children in local primary and secondary schools can be identified. C/TC represents employee household children in primary and secondary schools as a percentage of the total local enrollment in public primary and secondary schools. This percentage, when multiplied by the public school operating budget for primary and secondary schools, results in an estimate of total costs imposed by employee households. SB and TC should be available from the local department of public instruction. Again, be certain that the figure used for SB excludes contributions to the school budget from other than local sources, since these have been counted in G-1.4, and we are only concerned with costs to local government.

Equation G-3

GP

Value of Local Governmental Property Committed to Support Services to Employee Households

$$GP = (GP_m)(MOC/B) + (GP_s)(PSOC/SB)$$

GP = Value of local governmental property committed to support services to employee households
GP_m = Value to all non-school-related governmental property
GP_s = Value of all school-related governmental property
MOC = Local governmental operating costs (excluding schools) attributable to institutional employee households (see G-2.1)
B = Local operating budget excluding public school costs and non-locally generated revenues
$PSOC$ = Public school operating costs attributable to institutional employee households
SB = Local public school operating budget excluding revenues from non-local sources

Equations G-2.1 and G-2.2 provide an estimate of public school and other governmental operating costs attributable to institutional employee households. Equation G-3 estimates local government capital costs attributable to the institution.

$\underline{PSOC/SB}$ represents school costs attributable to employee households as a percentage of the total school budget. G-3 attributes the same percentage of the value of school facilities, $\underline{(GP_s)(PSOC/SB)}$, to employee households. The same procedure is used to apportion the value of all other governmental property $\underline{(GP_m)(MOC/B)}$. GP_m and GP_s should be available from the local or state department of assessments.

Whether G-3 provides a current dollar value or provides replacement estimate of the total land and facilities required to serve employee households depends, in part, on how localities determine values for GP_m and GP_s. If these values represent the cost today of replacing facilities, rather than the actual original cost of these facilities, expressed in current dollars or otherwise, then GP_m and GP_s may be much larger than the original costs of acquisition and construction. See the discussion of G-2.1 for other issues that apply here. Also, in the discussion of B-4.1 we pointed out that there was no way of determining the marginal users, that is, the enterprise whose demand could only be met by additional investment in business real property. Therefore business investment in real property was apportioned over all users. The situation in G-3 is analogous.

Equation G-4

FTX

Foregone Real Estate Taxes Due to the Institution's Tax-Exempt Status

$$FTX = AV\,(ar)(pt)$$

FTX = Foregone real estate taxes due to the institution's tax-exempt status
AV = Assessed value of institutional tax-exempt property
ar = Assessment ratio of local jurisdiction
pt = Local property tax rate

Local governments derive a significant proportion of their income from local property taxes. When an arts organization rents property, it may be assumed that the owner of the property pays property tax. However, tax-exempt arts and cultural institutions that own and use property for tax-exempt purposes are not subject to the property tax. Therefore, when a tax-exempt institution buys a piece of property, that property is, in effect, taken off the tax rolls and represents lost or foregone local property tax revenue.

The identification of total foregone real estate taxes presents a variety of problems. Institutions do not simply buy property: they may build a concert hall, museum, or so forth. This may constitute a mixed blessing when viewed from the standpoint of foregone taxes. Even if the facility could be taxed, the land might have generated more in property tax revenues had it been put to some other use.

Conversely, even though non-profit arts organizations do not pay property tax, the erection or rehabilitation of buildings for artistic and cultural purposes can have a positive effect of surrounding areas, upgrading property values and thereby increasing total property tax revenues.

Equation G-4 identifies foregone property taxes in light of these theoretical and technical difficulties. AV, the assessed value of exempt property owned or occupied by the institution, may be obtained from the local tax assessment office, as are the assessment ratio (ar), and the local property tax rate (pt).

The examined institution may make voluntary contributions in lieu of paying the property tax and/or may pay property tax on property they own which is not devoted to non-profit purposes. These payments are counted directly in another equation, G-1.1 (RET_i).

Equation G-5

SSVS

Value of Local Governmental Services Self-Provided by the Institution

$$SSVS = P_i + S_i + L_i + T_i$$

SSVS = Value of local governmental services self-provided by the institution

P_i = Total annual cost of institution-provided police and security services

S_i = Total annual cost of institution-provided street maintenance

L_i = Total annual cost of institution-provided lighting (including lighting of parking facilities)

T_i = Total annual cost of trash removal by private company (does not include janitorial and building maintenance costs)

In some cases, an examined institution may pay for services that local government would otherwise have provided. When this happens, the institution is saving local tax dollars by providing for itself rather than utilizing government services at taxpayer expense.

With respect to some specialized services, there are difficulties in estimating what it would have cost government to provide them had not the institution provided for itself. The auditor's report of the institution will identify what it cost the institution to purchase these services, and the researcher will have to make a judgment as to whether the incurred expense would otherwise have been incurred by government. The terms in equation G-5 refer to various typical services provided by government that might have been self-provided by an institution.

Impacts on Individuals

Up to this point in the User Manual, we have sought to estimate economic effects on the business sector and government. We now estimate some economic consequences for individuals. Appendix B discusses the multiplier values referred to in the next three equations.

Equation I-1

J

Number of Local Jobs Resulting from Institution-Related Direct Effects on the Local Business Sector and Government

$$J = \mathrm{Emps} + x(E + OC)$$

J = Number of local jobs resulting from institution-related direct effects on the local business sector and government
Emps = Total number of employees
x = Marginal employment requirement of an additional dollar's worth of local spending
E = Institution-related direct expenditure in the local community (see B-1)
OC = Operating cost of government-provided municipal and public school services attributable to the institution and its employee households (see G-2)

The equation I-1 estimates the total number of local jobs attributable to the institution in terms of total employment provided by the institution itself and jobs created indirectly due to the institution's direct local economic effects. In order to meet demand, local business must invest in facilities, as noted by equation B-4.1. But at some point firms must also hire more people due to increased business volume. National estimates have been made of the marginal employment requirements of an additional dollar's worth of local spending, x, that is, the number of new jobs required for each additional dollar of demand (see Appendix B). The terms to be multiplied by x are the total direct local business and governmental expenditures attributable to the institutions. The resulting figure, taken together with total jobs directly provided by the institution, yields an estimate of total local jobs attributable to the institution.

Indirect expenditures are excluded from I-1 because the derivation of x is based on direct expenditures only. Therefore, this formulation may significantly underestimate the eventual impact on jobs. The inclusion of OC assumes that all local governmental expenditures are local and that governmental expenditures have the same local impact as private sector expenditures.

Equation I-2

PY

Total Local Personal Income Due to Institution-Related Direct Effects on the Local Business Sector and Government

$$PY = W + p(E + OC)$$

PY = Total local personal income due to institution-related direct effects on the local business sector and government
W = Gross compensation, including FICA, federal withholding, state withholding, unemployment compensation, and contributions to pension plans
P = Profit and payrolls per dollar of institution-related expenditures
E = Institution-related direct expenditures in the local community
OC = Operating cost of government-provided municipal and public school services attributable to the institution and its employee households

Total personal income of local residents attributable to the institution can be estimated as wages to institutional employees together with wages to the additional employees identified by equation I-2. National estimates have been made of the addition to payrolls and profits of each additional dollar's worth of demand, p (see Appendix B). Total personal income is estimated as institutional wages to local residents plus personal income as a consequence of total direct demand attributable to the institution. The coefficient p is likely to underestimate total eventual impact on personal incomes for the reasons described in connection with the co-efficient x of equation I-1. The inclusion of OC in I-2 assumes that all local governmental expenditures are local and that governmental expenditures have the same local impact as private sector expenditures.

Equation I-3

DG

Durable Goods Purchases Attributable to Institution-Related Increases in Total Personal Income

$$DG = k(PY)$$

DG = Durable goods purchases attributable to institution-related increases in total personal income
k = Proportion of personal income devoted to purchases of durable goods
PY = Total local personal income due to institution-related direct effects on the local business sector and government (Equation I-2)

Equation I-3 relies on the national estimate, k, of the proportion of an individual's total income used to purchase durable goods from local sources (see Appendix B). PY was estimated in I-2.

Guide to Model and Data Sources

VARIABLE	DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
B-1 Institution-Related Local Expenditures		$E = E_i + E_e + E_g + E_a + E_v$	33	--
E_i = Local expenditures by institutions	B-1.1	$E = (\$2,405,026) + \$4,422,976) + (\$68,247) + (\$2,624,601) + (\$1,891,392)$		
E_e = Local expenditures by employees	B-1.2			
E_g = Local expenditures by guest artists	B-1.3	$E = \$11,184,676$		
E_a = Local expenditures by local audience	B-1.4			
E_v = Local expenditures by non-local audience	B-1.5			
B-1.1 Local Expenditures by Institutions E_i		$E = z(TE_i - W_e - \text{Transf.} - T_x)$	34	13
z = Fraction of non-labor expenditures	Institutional Records	$E_i = .47(\$9,418,304 - \$4,041,222 - 0 - \$32,328)$		
TE_i = Total expenditures of institution	Institutional Records	$E_i = \$2,405,026$		
W_e = Gross compensation to employees	Institutional Records	Baltimore calculations resulting in $E_i = \$2,405,026$ were diaggregated over eight institutions. z = .47 is a weighted average.		
Transf = Internal accounts and transfers	Institutional Records			
T_x = Taxes and fees to government	Institutional Records			
B-1.2 Local Expenditures by Employees (E_e)		$E_e = f(W_{en} = .5Y_{ns})$	35	13
f = Fraction household income spent locally	Staff Survey	$E_e = .66(\$6,701,479 + 0)$ $E_e = \$4,422,976$		
W_{en} = Total net institutional salaries	Staff Survey	Data for the Baltimore study were calculated using family income (Y) in place of $W_{en} + .5Y_{ns}$). \$6,701,479 is the equivalent value of wages and non-salary income for the Baltimore sample.		
Y_{ns} = Household non-salary income				

VARIABLE	DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
B-1.3 Local Expenditures by Guest Artists (E_g)		$E_g = g(GD)$	36	15
g_i = Average daily expenditures	Staff Survey & Institutional Records	$E_g = \$35.68$ (1,913 days)		
GD_i = Total guest days in region		$E_g = \$68,247$		
B-1.4 Local Expenditures by Local Audiences (E_a)		$E_a = A(TA)$	38	14
a = Average ancillary expenditures	Audience Survey	$E_a = \$6.60$/party (\$397,667)		
TA = Total paid attendance	Institutional Records	$E_a = \$2,624,601$		
B-1.5 Local Expenditures by Non-Local Audience (E_v)		$E_v = V(TVD)$	39	14
v = Average daily expenditures	Audience Survey	$E_v = \$30.32$/day (62,381 days)		
TVD = Total annual visitor days	Institutional Records	$E_v = \$1,891,392$		
B-2 Secondary Business Volume Stimulated by Institution Expenditures (BP)		$BP = m_p - 1)\ (E)$	40	15
m_p = Repurchase coefficient	Appendix B	$BP = (1.818 - 1)(11,184,676)$		
E = Institution-related local expenditures	See B-1	$BP = \$9,149,065$		

NOTE: Calculations in the Baltimore study covered six local jurisdictions and eight institutions. Parameters (denoted by small letters in the equations - z,f,g,a,v) were computed for the purpose of this table as weighted averages from separate data from each institution that was utilized for the original calculations.

VARIABLE	DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
B-3 Secondary Business Volume Stimulated by Individual Expenditures (BV)		BV = (.45)($11,184,676)	41	15
M_i = Repurchase coefficient	Appendix B	BV = (.45)($11,184,676)(2.857 - 1)		
E = Institution-related local expenditures	See B-1	BV = $9,350,389		
B-4 Value of Local Business Property Attributable to Institution Business (BI)		BI = RP + Inv	42	15
RP = Value local business real property attributable	See B-4.1	BI = $2,309,031 + $3,437,712		
Inv = Value local business inventory attributable	See B-4.2	BI = $5,746,743		
B-4.1 Value Local Business Real Property Attributable (RP)		RP = (E/TBV)(AV/ar)	43	--
E = Institution-related local expenditures	See B-1	RP = ($11,184,676/$26,702,272,000) ($2,391,693,000/.434)		
TBV = Total local business volume	Census of Business 1967 Census of Manufacturing 1967 State Retail Sales Tax Division	RP = $2,309,031		
AV = Total assessed value of business property	State Department of Assessments and Taxation 1976			
ar = Assessment ratio	State Department of Assessments and Taxation 1976			

VARIABLE	DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
B-4.2 Value of Local Business Inventory Attributable (Inv)		Inv = ir (E + BP + BV)	45	--
ir = Inventory-business volume ratio	Statistics of Income 1972 IRS	Inv = .112 (11,184,676 + $9,149,065 + $9,350,389)		
E = Institution-related local expenditures	See B-1	Inv - $3,437,712		
BP = Secondary business volume stimulated by institution expenditures	See B-2			
BV = Secondary business volume stimulated by individual expenditures	See B-3			

VARIABLE	DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
B-5 Expansion of Local Credit Base Attributable (CB)		CB = (1-t) [TD_i + TD_e (emps)] + (1-d) . [DD_i + DD_e (emps) + cbv (E + BP + BV)] BC = (1-.03) [\$74,750 + \$6,129(503)] + (1-.1625) [\$43,498 + \$485(503) + .028 (\$11,184,676 + \$9,149,065 + \$9,350,389)] CB = \$3,068,194	46	17
t = Time deposit reserve requirement	Federal Reserve Bulletin			
TD_i = Average daily balance in institution time accounts	Institutional Records			
TD_e = Average daily balance in employee time accounts	Staff Survey			
Emps = Total full time employees	Institutional Records			
d = Demand deposit reserve requirement	Federal Reserve Bulletin			
DD_i = Average daily balance in institutional demand accounts	Institutional Records			
DD_e = Average daily balance in employee demand accounts	Staff Survey			
cbv = Cash-to-business volume ratio	Federal Reserve Bulletin			
E = Institution-related local expenditures	See B-1			
BP = Secondary business volume stimulated by institution expenditures	See B-2			
BV = Secondary business volume stimulated by individual expenditures	See B-3			
B-6 Local Business Volume Unrealized (NBV)		NBV = IB NBV = 0	48	17
IB = Income from institution administered business				

VARIABLE	DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
G-1 Tax Revenues Attributable (GR)		GR = RETX + ST + YT + SA + OR	49	18
$RETX_i$ = Institution-related real revenues	See G-1.1	GR = \$99,537 + \$5,062 + \$27,558 + \$19,610 + 0		
ST = Institution-related sales tax revenues	See G-1.2	GR = \$151,767		
YT = Employee income tax revenue	See G-1.3			
SA = State aid attributable to employee households				
OR = Other revenues attributable				
G-1.1 Institution-Related Real Estate Tax Revenues ($RETX_i$)		RETX = RET_i + RET_e + RET_b	50	18
RET_i = Local real estate taxes paid by institution	Institutional Records	RETX = 0 + \$60,153 + \$39,384		
RET_e = Local real estate taxes paid by employee households	See G-1.1.1	RETX = \$99,537		
RET_b = Local real estate taxes paid by business attributable	See G-1.1.2			
G-1.1.1 Local Real Estate Taxes Paid By Employee House-Holds (RET_e)		RET_e = Emps(h)(pt)(TRA/R)	51	--
Emps = Total full time employees	Institutional Records	RET_e = 404(.51)(.386) . (\$5,622,416,000/623,440)		
h = Percentage of employees owning homes	Staff Survey	RET_e = \$60,153		
pt_j = Property Tax rate	Maryland Assoc. of Counties Report 1976-77			
TRA_j = Residential assessments	State Department of Assessments & Taxation 1976			
R_j = Total number of residences	1970 Census of Population			

VARIABLE	DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
G-1.1.2 Local Real Estate Taxes Paid by Business Attributable (RET_b)		RET_b = (RP)(ar)(pt)	53	--
RP = Value of local business real property	See B-4.1	RET_b = (\$2,309,031)(.434)(.0386)		
ar = Assessment ratio	State Department of Assessments & Taxation 1976	RET_b = \$39,384		
pt_j = Property tax rate	Maryland Assoc. of Counties Report 1976-77			
G-1.2 Institution-Related Sales Tax Revenues (ST)		ST = st (STR)(E/TBV)	54	18
st_j = Locally retained sales tax rate	Retail Sales Tax Division	ST = (\$38,779,000)(\$11,184,676 ÷ \$26,702,272,000)		
STR = Total sales tax revenues	Maryland Counties Assessors Offices	ST = \$5,062 Baltimore calculations were disaggregated over six jurisdictions. \$38,779,000 [s+(STR)] is the total of locally retained sales tax in each of the six jurisdictions.		
E = Institution-related local expenditures	See B-1			
TBV = Total local business volume	Census of Business 1967 Census of Manufacturing 1967 State Retail Sales Tax Office			
G-1.3 Employee Income Tax Revenues (YT)		YT = (TYT/HH)(i)(Emps)	55	18
TYT_j= Total income tax revenues retained	State Department of Assessments & Taxation 1976	YT = (\$178,453,000/2,138,000) (1.00)(404)		
HH = Total local households	Maryland Statistical Abstracts	YT = \$27,558		
i - Percentage of employees paying income tax	Staff Survey			
Emps= Total full time employees	Institutional Records			

VARIABLE		DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
G-1.4	State Aid Attributable to Employee Households (SA)		SA = PS + OR	56	18
PS_i	= State aid to public schools attributable	See G-1.4.1	SA = $19,610 + 0		
OR	= Other revenues attributable		SA = $19,610		
G-1.4.1	State Aid to Public Schools Attributable (PS_i)		PS = N(C)(SE)	57	18
N	= Number of employees households with children in public schools	Staff Survey	PS = 53(1)(370)		
C_{ij}	= Average number of children per employees households	Staff Survey	PS = $19,610		
SE	= Total state aid per student	Maryland Statistical Abstracts			
G-2	Operating Cost of Municipal and School Services Attributable (OC)		OC = MOC + PSOC	58	18
MOC	= Municipal operating costs attributable	See G-2.1	OC = $648,183 + $30,429		
PSOC	= Public school operating cost attributable	See G-2.2			
G-2.1	Municipal Operating Costs Attributable (MOC)		MOC = B(EHH/POP)	59	--
B_j	= Operating budget excluding public schools	Maryland Assoc. of Counties Report 1976-77	MOC = $1,050,165,000(863/2,138,000)		
EHH_{ij}	= Total number of persons in employee households	Institutional Records & Staff Survey	MOC - $648,183		
POP_j	= Total local population	Maryland Assoc. of Counties Report 1976-77			

VARIABLE		DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
G-2.2	Public School Operating Costs Attributable (PSOC)		PSOC = (SB)(C/TC)	61	18
SB_j	= School operating budgets	State Division of Fiscal Research	PSOC - ($648,927,000)(53/452,518)		
C_{ij}	= Total number of children of employees in public school	Staff Survey	PSOC - $30,429		
TC_j	= Total number of children in public schools	Maryland Statistical Abstracts			
G-3	Value of Government Property Committed (GP)		GP = (GP_m)(MOC/B) + (GP_s)(PSOC/SB)	62	19
GP_m	= Value of all government property except schools	State Department of Assessments & Taxation	GP = ($342,803,000)($648,183 + $1,050,165,000 + ($670,340,000). ($30,429/$648,927,000)		
GP_s	= Value of government property associated with schools	State Department of Assessments & Taxation	GP = $274,138		
MOC	= Municipal operating cost attributable	See G-2.1			
B_j	= Operating budget excluding public schools	Maryland Assoc. of Counties Report 1976-77			
PSOC	= Public school operating costs attributable	See G-2.2			
SB_j	= School operating budgets	State Division of Fiscal Research			

VARIABLE		DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
G-4	Foregone Real Estate Taxes Attributable (FTX)		$FTX = AV_{nx}(ar)(pt)$	63	19
AV_{nx}	= Assessed value of non-exempt land & buildings occupied/owned by insitutiton	City Department of Assessments & Taxation	FTX = \$1,992,160 (.50)(.06)		
ar	= Local assessment ratio	City Department of Assessments & Taxation	FTX = \$59,765*		
pt	= Local property tax rate	City Department of Assessments & Taxation			
G-5	Value of Municipal Services Self-Provided (SSVS)		$SSVS = P_i + S_i + L_i + T_i$	64	19
P_i	= Total annual cost of security services self-provided	Institutional Records	SSVS = \$29,331 + 0 + 0 + \$3,841		
S_i	= Total annual cost of street maintenance self-provided	Institutional Records	SSVS = \$33,172		
L_i	= Total annual cost of street lighting self-provided	Institutional Records			
T_i	= Total annual cost of trash removal self-provided	Institutional Records			
I-1	Number of Local Jobs Attributable (J)		J = Emps + x(E + OC)	65	21
Emps	= Total full time employees	Institutional Records	J = 404 + .000065(\$11,184,676 + \$678,183)		
x	= Marginal employment requirement	See Appendix B	J = 1175		
E	= Institution-related local expenditures	See B-1			
OC	= Operating cost of municipal & school services attributable				

---

* Note: Assumes that all city-owned property will remain tax-exempt. See pp. 18 & 20.

VARIABLE		DATA SOURCE	BALTIMORE STUDY RESULTS	Manual Page Reference	Case Study Page Reference
I-2	Personal Income of Employees Attributable (PY)		PY = W_e + p(E + OC)	66	21
W_e	= Gross compensation to employees	Institutional Records	PY = $4,041,222 + .475($11,184,676 + $678,183)		
P	= Payrolls and profits per dollar of institution-related expenditures	See Appendix B	PY = $9,676,284		
E	= Institution-related local expenditures	See B-1			
OC	= Operating cost of municipal and school services attributable	See G-2			
I-3	Durable Goods Purchases Attributable (DG)		DG = k(PY)	67	21
k	= Proportion of personal income spent on durables	See Appendix B	DG = .031 ($9,676,284)		
PY	= Personal income of employees attributable	See I-2	DG = $299,965		

APPENDIX B

Multiplier and Secondary Spending Effects

The "multiplier effect" describes the process by which a dollar of primary or direct expenditure in the community is expected successively to generate some multiple of its original impact on the local economic base. For example, a dollar paid to a resident employee of an arts institution will be spent partly on local goods and services and partly on products or services from suppliers outside the community. The portion spent locally goes to local businesses who, in turn, spend some share locally and the remainder with outside suppliers, and so on until "leakage" to outside vendors completely exhausts the initial spending effect. The final impact of the initial expenditure will be some multiple varying directly in size with the fraction respent locally and varying inversely with the amount of "leakage" to outside suppliers from the local spending cycle. A typical multiplier value is calculated as $\frac{1}{1-mpc}$ where mpc is the "marginal propensity to consume (that is, the fraction of income spent) locally" and 1-mpc is the rate of "leakage" into outside purchases.

The larger and more diversified the local economic base, the more self-supporting the community is likely to be and the larger will be the proportion of local direct expenditures retained and respent locally, that is the larger will be the anticipated multiplier effects. Because we do not have direct survey evidence on the amount of total business spending generated locally by local suppliers in the Baltimore region, we have interpolated an approximate multiplier value from data for cities of varying size in the U.S.

TABLE 9

Multiplier Values for Baltimore Arts Study

	Assumed Multipliers	Model	Range of Multiplier Values Used in Other Studies*
m_p	1.818	B-2	1.15 - 2.50
m_i	2.857	B-3	2.0 - 4.0
p	.475	I-2	.25 - .66
x	.000065	I-1	.00007 - .00009
k	.031	I-3	- -

Similarly, the larger the local market area and the more diversified and integrated its economic base, the easier it can absorb additional local demand from arts institutions' expenditures with smaller additional requirements for labor and capital. This means that m_p, the marginal employment requirements of an additional dollar's worth of local institutions-related spending and m_i, the marginal addition to payrolls and profits from an additional dollar's worth of institutions-related spending, will also vary by market size and can be interpolated from national data on other cities.

Other studies have characterized these respending coefficients as "multipliers" and used them to estimate the total of direct and indirect effects by multiplying total institution expenditures by the multiplier. Equations B-2 and B-3 of this model are intended to estimate indirect effects only. Therefore, as used in calculations the coefficients m_i and m_p are reduced by 1.

---

*See Caffrey and Isaacs, Estimating the Impact of a College or University on the Local Economy, pp. 44-45; and S.J. Weiss and E.C. Gooding, Estimation of Differential Employment Multipliers in a Small Regional Economy (Research Report to the Federal Reserve Bank of Boston, No. 37, Boston, 1966).

APPENDIX C

The Employee Survey

Included in this appendix is a sample confidential survey for distribution to employees and guest artists. The questionnaire is included for illustrative purposes only. Researchers may choose to add or omit questions depending on the economic effects they intend to identify and the extent to which they will utilize data on the general local population on the assumption that institutional employees and their households are not dissimilar. We recommend conducting an employee survey whenever possible. There may be important respects in which institutional employees are likely to differ from the general population.

As in the case of survey questions 4 and 9, researchers will have to include jurisdictional categories and names in keeping with local and state names and types, for example, county, parish, township. In addition, institutional auditor's reports are for the previous fiscal year, while the employees surveyed are those employed at the time of the survey. Researchers must make the assumption that the characteristics of current employees are not dissimilar to those of the previous year. However, if the number of employees at the time of the study is different than the number covered by the auditor's report being used, then researchers will have to weight results accordingly, using the last fiscal year's number of employees.

Further, a non-professional might begin designing the survey instrument by listing all data on employees and their households that will be required by the equations to be used. One might also seek the advice of experienced researchers, perhaps taking advantage of local college or university resources.

The questionnaire solicits personal information; response rates may be increased by providing envelopes in which respondents can return questionnaires.

SURVEY OF STAFF

The Johns Hopkins University Center for Metropolitan Planning and Research is assessing the impact of arts and cultural institutions on the economy of the Baltimore Metropolitan Area. This study is intended to serve as a national model of use to other metropolitan areas in evaluating the impact of their arts and cultural institutions. PLEASE DO NOT IDENTIFY YOURSELF ON THIS QUESTIONNAIRE. BE ASSURED THAT ALL RESPONSES WILL BE KEPT IN STRICTEST CONFIDENCE. We appreciate your cooperation.

PLEASE RETURN COMPLETED QUESTIONNAIRE TO THE GENERAL MANAGER'S OFFICE IN THE ENVELOPE PROVIDED.

If you are resident full or part-time staff with this institution, please answer questions 1 through 10.

If you are a guest artist with this institution, please begin with question 11.

1. Are you employed at this institution full time or part time?

   _____full time   _____part time

2. How many persons are in your household, including yourself? _____

3. How many of the children in your household attend public elementary or secondary schools? _____

4. Where is your residence? (CHECK ONE)

   a) City _____
   b) County _____
   c) Other State County _____
   d) Out-of-State _____

5. In what type of housing do you now reside?

   _____ rental housing
   _____ home you own or are buying

6. If you own your home or are buying, approximately what was your last annual property tax bill? $__________

7. What is the total annual salary income before taxes and payroll deductions of ALL PERSONS (including yourself) who live in your household? $__________

8. What is the total annual non-salary income (rents, interest, dividends, etc.) of ALL PERSONS (including yourself) who live in your household? $ __________

9. What percentage (0%, 10%, 20% .....100%) of your Total Household income, after taxes, do you estimate is spent within:

   a) City _____
   b) County _____
   c) Other State County _____
   d) Out-of-State _____

10. For All Members of Your Household, please estimate the aggregate monthly average balance in State banks, credit unions, and savings and loans:

    checking accounts $__________
    savings accounts $__________

THE FOLLOWING QUESTIONS ARE FOR GUEST OR NON-RESIDENT ARTISTS ONLY

---

11. If you a guest artist, how many days will you stay in the metropolitan area on this visit __________ ?

12. Approximately how much will you, your family and those in your entourage, spend while in the metropolitan area?

    ____

13. Approximately what proportion of this money will be spent in the city as opposed to the suburbs? __________

102

APPENDIX D

The Audience Survey

There are great problems associated with the use of self-administered audience surveys in developing meaningful data on audience expenditures. Distributed and collected at the arts organizations, these survey instruments ask the respondent to report total expenditures associated with attendance at the arts event apart from ticket or admission costs. A major problem is the variability of audiences with program content and location of event. The exhibits at museums may vary appealing to a somewhat different audience each time. Conversely, heavily subscribed performing arts organizations may be attended by the same audience of subscribers regardless of the program. In all cases, a difference in the time, day of the week, and location of the events may effect audience composition.

Aside from the general problem of assuring "representative" audiences when sampling only a few program events, there are specific problems associated with the identification of ancillary expenditures. If the respondent will incur expenses after the performance or museum visit, he or she may not know how much they will spend, and may not have even decided yet to incur expenses. Respondents may be able to accurately cite only the expenses they incurred up to the time they were asked to complete the survey.

When individuals incur expenses, they typically are due to costs incurred not just by themselves, but by someone else, such as their spouse, children, relatives, or friends. Thus, responses can only be meaningfully interpreted as average expenditures by parties or groups of various sizes. This would seem to require respondents to identify party size or otherwise to indicate the number of persons covered by the expenditures reported. If the respondent did not pay the group expense -- if, for example, a spouse or friend did -- then he or she may not know how much was spent and may not be willing to find out. Our procedure calculated total ancillary audience expenditures from data on total expenditures by party, stratified by party size.

There are difficulties associated with the design and implementation of self-administered audience surveys. This report is not the proper vehicle by which to explore these issues. We raise them now in the belief that our procedures are the most sophisticated to date with respect to the use of self-administered audience surveys to identify audience expenditures. Neophytes would do well to secure the services of survey research professionals. They might consider utilizing the talent associated with local institutions of higher learning or local planning departments. We believe that further research needs to be done on alternative strategies for estimating audience expenditures, perhaps including interviews and questionnaires distributed at the surveyed events to be completed and returned by mail after respondents return home.

APPENDIX E

Total Full-Time Employees and Full-Time Equivalents

In several equations, we suggest that researchers aggregate part-time employees into full-time equivalents, and/or treat part-time employees separately from total full-time employees. These models require data on the total number of individual jobs, not the total number of individuals who may fill those jobs, when individuals are replaced during the year. A large turnover in various positions will cause further complication.

You will find, especially when employing multi-jurisdictional analysis (see Appendix F), that employee residence is central to the task of distinguishing governmental impacts. In the circumstances in question, you will have to use the payroll records of those who had worked at a particular position during the year in question to determine that X% of those employed in that position resided in one jurisdiction or another. This information can then be used to apportion high turnover payroll slots among the local units of government. Part-time employees will have to be aggregated into full-time equivalents and then apportioned.

Part-time employees are of two types, those who work for the entire year or season but only part-time and those who work full-time but only for part of the full institutional year or season, for example, actors who may be part of a repertory company but appear in only one play. In the latter case, researchers should make sure that individuals are employees and not guest artists on contract. Guest artists are treated separately by equation B-1.3.

Researchers will have to use judgment in aggregating part-time employees into full-time equivalents. Individuals who work part-time for the entire year can be aggregated together by the proportion of full-time hours they work during the year. For example, 5 individuals may work 15 hours a week and the institution may consider 40 hours a week to be full time. Therefore, the number of full-time equivalents is 5(15/40). (This example presupposes a 52-week base full-time year.)

Individuals who work full-time but for only part of the full institutional year can be similarly aggregated. For example, 5 individuals may work for 4 weeks for an institution that considers 48 weeks to be full-time. Therefore, the number of full-time equivalents is 5(4/48).

We do not believe that volunteers and Comprehensive Education and Training Act (CETA) personnel should be included as employees. The model focuses on individuals receiving compensation from the institution and on those who are in positions that would not have existed were it not for the examined institution. Volunteers do not meet the former condition and CETA workers do not meet the latter. CETA positions are distributed among communities for allocation as the community sees fit. Presumably, all positions would have been utilized by the community even in the absence of the examined institutions. This should not be taken as suggesting that volunteers and CETA workers do not have an economic impact. They do, especially in cases where programs and services would not have been available had there been no volunteers or CETA workers.

APPENDIX F

Adaptations of the Model for Multi-Institutions and Multi-Jursidictions

In some instances, it may be of interest to a regional arts organization or some other agency to analyze the economic impact of a *collection* of arts and cultural organizations on a community. In this case, the data described in the Manual for a single-institution analysis must, of course, be gathered for all organizations in the sample and the total impacts calculated from the specified equations by adding up the individual impacts of each of the component institutions.

Since accounting procedures are even less standardized among tax-exempt organizations than among ordinary corporate organizations, definitions of expenditures, classification of revenues and contributions, classification of employees, and other data items required by the equations may vary from one arts institution to another. The researcher should inquire about the precise definitions used by each institution at the time the primary data are collected and treat uniformly such items as: sales and acquisitions for museum collections; cross-purchase of goods or services between institutions (such as an opera company's employment of the local symphony for its performances); and the capitalization of certain accounts such as contributions to a building program. The important principles are to avoid double-counting of expenditures in the records of more than one institution and to standardize as much as possible the accounting for major categories of capital and operating expenditures.

The attached schema displays the changes in the 30 equations of the model required to account for multiple institutions by using the subscript i to denote a particular institution and summation signs $(\sum_{i=1}^{n})$ to indicate where impacts must be totalled over n institutions.

Similar adaptations must be made in the equations where one is concerned with identifying differential impacts of arts institutions across multiple jurisditions. This situation arises most frequently in metropolitan areas where employees, audiences, and suppliers are distributed throughout several political jurisdictions. Where multiple jurisdictions are of interest, it is necessary to identify the relevant items on the employee and audience surveys *by jurisdiction*. For example, real estate taxes paid by employees must be attributed to individual property tax rates in each jurisdiction. Similarly, the allocation of sales tax revenues, school aid, purchases from local suppliers, and the like must be distinguished by location. In some cases, however, there may be no reason to believe that impacts vary by jurisdiction (as, for example, the local respending fraction) so that a single parameter can be used in each institutional equation.

In the attached schema, equations that may be distinguised by jurisdiction are indicated with the subscript j and the total area impacts are indicated by summing over m jurisdictions ($\sum_{i=1}^{m}$). It should be noted that disaggregating economic impacts among individual jurisdictions yields information of little value in some cases. For example, since localities within a metropolitan area are economically integrated, though politically distinct, attempting to trace secondary business expenditures to particular jurisdictions does not make as much sense as identifying an aggregate regional impact. This occurs because, while it is possible (though unwieldy) to identify direct expenditures by jurisdictions, one can have relatively little confidence that the secondary impacts of these expenditures will remain in the locality, and more precise information on suppliers' secondary expenditure patterns is difficult to obtain.

However, disaggregation of public sector (government) impacts is meaningful and may have utility in circumstances where the regional distribution of support for the arts is a policy interest. Since each disaggregation (by jurisdiction, by institution) adds substantially to the tasks of data collection and analysis, the researcher should consider whether the extra detail in the resulting information will be worth these additional costs.

Equations Adjusted for Multiple Institutions

Shown below are only those equations that must be modified to reflect calculations over more than one institution. Equations not listed below remain the same as those described in the text for a single institution.

$$E_I = \sum_{i=i}^{n} Z_i(TE_i - W_{ei} - Transf_i - T_{xi})$$

$$E_e = \sum_{i=i}^{n} f_i(W_{en_i} + .5\ Y_{ns_i})$$

$$E_g = \sum_{i=i}^{n} g_i(GD_i)$$

$$E_a = \sum_{i=i}^{n} a_i(TA_i)$$

$$E_v = \sum_{i=i}^{n} v_i(TVD_i)$$

$$CB = \sum_{i=i}^{n} \{(1-t)\ \{TD_i+(TD_e)(Emps_i)\} + (1-d)\{\ DD_i+(DD_e)(Emps_i) + cbv(E)\}\}$$

$$NBV = \sum_{i=i}^{n} IB_i$$

$$RET_e = \sum_{i=i}^{n} Emps_i(h_i)(pt)(TAR/R)$$

$$MOC = \sum_{i=i}^{n} (EHH_i/Pop)(B)$$

$$PSOC = \sum_{i=1}^{n} (C_i/TC)SB$$

$$FTX = \sum_{i=1}^{n} AV_i(ar)(pt)$$

$$SSVS = \sum_{i=1}^{n} P_i + S_i + L_i + T_i$$

$$J = \sum_{i=1}^{n} Emps_i + x(E_i + OC_i)$$

$$PY = \sum_{i=1}^{n} W_i + p(E_i + OC_i)$$

★ U. S. GOVERNMENT PRINTING OFFICE : 1978 O - 259-584

Equations Adjusted for Multiple Jurisdictions

Shown below are only those equations that must be modified to reflect calculations over more than one jurisdiction. Equations not listed below remain the same as those described in the test for a single jurisdiction.

$$E_I = \sum_{j=1}^{m} Z(TE_j - W_{e_j} - Transf_j - T_{x_j})$$

$$E_e = \sum_{j=1}^{m} f(W_{en_j} + .5Y_{ns_j})$$

$$E_g = \sum_{j=1}^{m} g(GD_j)$$

$$E_a = \sum_{j=1}^{m} a(TA_j)$$

$$E_v = \sum_{j=1}^{m} v(TVD_j)$$

$$RP = \sum_{j=1}^{m} (E_j/TBV_j)(AV_j/ar_j)$$

$$RET_e = \sum_{j=1}^{m} Emps_j(h_j)(pt_j)(TRA_j/R_j)$$

$$RET_b = \sum_{j=1}^{m} pt_j(E_j/RP_j)(AV_j)$$

$$ST = \sum_{j=1}^{m} st_j(STR_j)(E_j/TBV_j)$$

$$YT = \sum_{j=1}^{m} (TYT_j/HH_j)(i)(Emps_j)$$

$$SA = \sum_{j=1}^{m} PS_j + OR_j$$

$$MOC = \sum_{j=1}^{m} (EHH_j/Pop_j)(B_j)$$

$$PSOC = \sum_{j=1}^{m} (C_j/TC_j)(SB_j)$$

$$GP = \sum_{j=1}^{m} (GP_{m_j})(MOC_j/B_j) + (GP_{s_j})(PSOC_j/SB_j)$$

$$FXT = \sum_{j=1}^{m} AV_j(ar_j)(pt_j)$$

$$SSVS = \sum_{j=1}^{m} P_j + S_j + L_j + T_j$$

END

U.S. DEPT. OF EDUCATION

OFFICE OF EDUCATIONAL
RESEARCH AND
IMPROVEMENT (OERI)

ERIC

DATE FILMED

FEB. 24 1989